

Service Manual

PIONEER
The Art of Entertainment

GA - S

• KEH-M5500/UC



ORDER NO.
CRT1474

MULTI-CD CONTROL FM/AM TUNER DECK AMPLIFIER

KEH-M5500

UC

KEH-M580 US

KEH-M4500 UC, X1H

KEH-M5550 ES

NOTE:

- See the separate manual CX-197 (CRT1328) for the cassette mechanism description.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

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SAFETY INFORMATION (UC, US MODEL)

CAUTION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.

Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

WARNING

Lead in solder used in this product is listed by the California Health and Welfare agency as a known reproductive toxicant which may cause birth defects or other reproductive harm (California Health & Safety Code, Section 25249.5). When servicing or handling circuit boards and other components which contain lead in solder, avoid unprotected skin contact with the solder. Also, when soldering do not inhale any smoke or fumes produced.

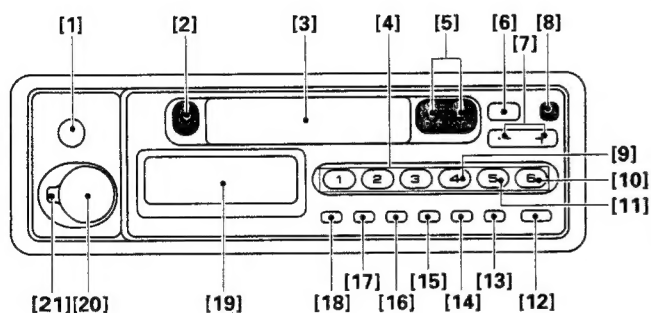


Fig. 1

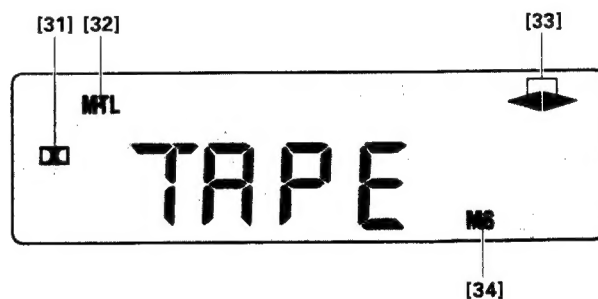


Fig. 3

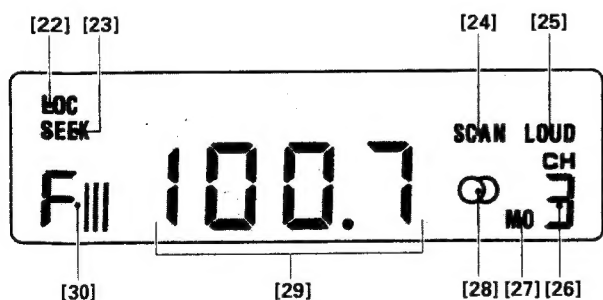


Fig. 2

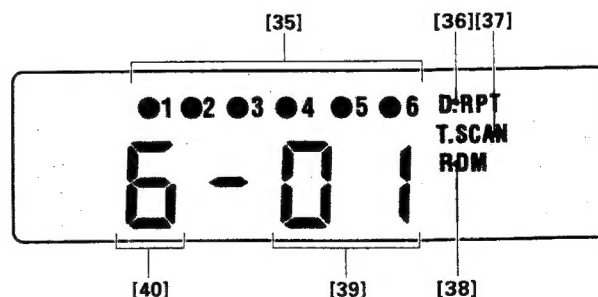


Fig. 4

1. USING THE REMOVABLE FRONT PANEL

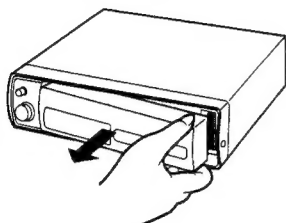
The front panel of this unit can be removed to prevent theft.

Parts Identification (Fig. 1)

- [2] Eject
- [5] Fast Forward, Rewind/Direction Change
- [8] Detach button

Detaching the Front Panel

1. Press button [8], and the right-hand side of the panel will eject.
2. To remove the front panel, pull its right-hand side toward you.



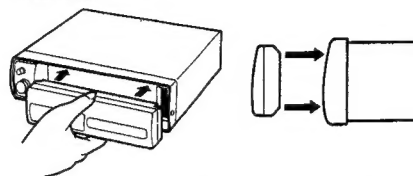
- Take care not to put pressure on the display or drop the front panel.

Optional Protective Case

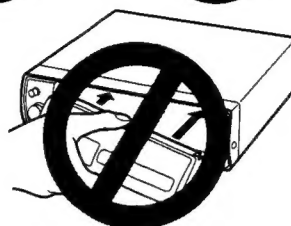
A separately sold protective case [AD-931] is available for the detached front panel. This case is highly recommended to protect the front panel from shocks and scratches.

Replacing the Front Panel

- Push the front panel into the main body.
- When replacing the front panel, do not put pressure on the display or control buttons.



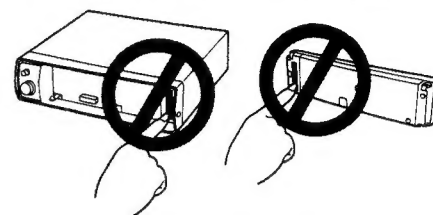
- Install the front panel holding it parallel to the main unit. Installing the panel tilted, as shown in the illustrations below, may cause the hook on the front panel to destroy the main unit's electrodes.



- Do not install the front panel while holding down buttons [2], [5] and [8] in Fig. 1. Doing so may destroy the buttons and the main unit.
- Note that if the front panel is not attached correctly, pushing button [8] may not release the panel, and the other control buttons may not function.

Precautions

- Do not touch the contacts on the front panel or on the unit body, since this may result in poor electrical contact. If dirt or other foreign substances get on the contacts, wipe them with a clean, dry cloth.

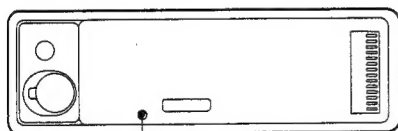


Precautions When Handling the Front Panel

- Do not leave the front panel in any area exposed to high temperatures or direct sunlight.
- Do not drop the front panel or otherwise subject it to strong impact.
- Do not allow such volatile agents as benzene, thinner, or insecticides to come into contact with the surface of the front panel.
- Never try to disassemble the front panel.

2. USING THE CLEAR BUTTON

- The clear button can be located on the unit after you have removed the front panel. Refer to the previous page to find out how to remove the front panel.



[41] Clear Button

Once all wiring is complete, press button [41] with a thin, pointed object. Though not a normal occurrence, the microprocessor which controls the operation of this unit can be affected by electrostatic noise. This generally is indicated by such symptoms as no power being supplied when you switch the unit on, failure of buttons and controls, or an abnormal display. Should this happen, press button [41] with a thin, pointed object to reset the microprocessor.

3. ADJUSTING VOLUME AND TONE

Parts Identification (Fig. 1)

- [1] Bass/Treble
- [2] Eject
- [3] Cassette Door
- [12] Source Selector
- [18] Loudness
- [19] Display
- [20] Volume/Balance
- [21] Fader

Switching Power On

Tape

- GEH-M2000 does not include this tape deck function.

Insert the cassette tape through the Cassette Door [3], and the power will be automatically turned on to get the tape start being played back. To eject the tape, press the button [2].

Radio, Multi-play CD player

The unit incorporates priority cassette tape play. The unit will not switch to radio or multi-play CD player while a tape is inserted. Press button [2] to eject the tape.

- GEH-M2000 does not include tape deck function. Therefore, procedures mentioned above will not be necessary.

Press button [12] to switch the radio on. Press button [12] a second time to switch it off. When combined with the separately available multi-play CD player (CDX-M30, etc.), the unit will switch in the following order:

Multi-play CD player — Radio — OFF.

- Inserting a tape while listening to either the multi-play CD player or radio will switch the unit to tape play.

4. USING THE RADIO

Parts Identification

(Fig. 1)

- [4] Preset
- [6] Band
- [7] Tuning/Local Seek Sensitivity/Seek, Manual
- [12] Source Selector
- [13] Best Stations Memory (BSM)
- [15] Local Station
- [16] Preset Scan
- [17] FM Stereo/Mono
- [19] Display

(Fig. 2)

- [22] Local Station
- [23] Seek
- [24] Preset Scan
- [26] Preset Number
- [27] FM Mono
- [28] FM Stereo
- [29] Frequency
- [30] Band

Listening to the Radio

• Electronic Tuner

Frequency allocation differs depending upon the area. This unit has been designed in accordance with the frequency allocations for North America. Use in other areas will result in improper reception.

Adjusting Audio

Adjusting Volume

Turn the control [20] to the right to raise the volume. Turn the control to the left to lower the volume.

Adjusting the Fader

Turn the control [21] upward to fade sound in the rear speakers. Turn the control downwards to fade sound in the front speakers.

- With a 2 speaker system, set the control in a central position.

Adjusting Bass

Turn the control [1] to the right to increase bass. Turn the control to the left to decrease bass.

Adjusting Treble

Pull the control [1] towards you until it clicks. Turn the control to the right while it is in this position to increase treble. Turn it to the left to decrease treble. After adjusting the control, push it back to its original position.

Adjusting Balance

Pull the control [20] towards you until it clicks. Turn the control to the right while it is in this position to fade sound in the left speaker. Turn it to the left to fade sound in the right speaker. After adjusting the control, push it back to its original position.

Using the Loudness Function

Press button [18] and the "LOUD" indicator will appear on the display. This "loudness" function enhances both the high and low ranges of sound to give even more power to output even at low volumes.

KEH-M5500, KEH-M4500

The unit incorporates priority cassette tape play. The unit will not switch to radio play while a tape is inserted, so be sure to eject the tape when you wish to listen to the radio.

1. Press button [12] to switch the radio power on.

Press button [12] to switch the tuner on and off. Operations will be different when the unit is combined with a separately available multi-play CD player (CDX-M30, etc.). For details on "Switching Power ON" refer to the relevant clause, on page 4.

2. Press button [6] to select a band.

3. Use seek tuning to tune in a frequency.

Confirm that the SEEK indicator [23] is shown on the display (if not, press the (+) and (-) sides of button [7] at the same time). Press the (+) side of button [7] to automatically tune in the next higher receivable frequency, and the (-) side for a lower frequency.

4. Adjust volume and tone (see page 4).

5. Assign the tuned frequency to one of the buttons in Bank [4] (preset memory).

Press and hold down one of the buttons in Bank [4] for at least two seconds. The frequency is assigned to the selected button when the preset number [26] stops flashing on the display. Up to 18 FM stations (6 each for FM1, FM2 and FM3), and six AM stations can be assigned to the preset memory buttons in Bank [4].

6. Once a frequency is assigned to a button in Bank [4], you just need to press that button to tune it in.

This also causes the number of the button pressed to appear at position [26] on the display.

BSM (Best Stations Memory)

This function automatically locates stronger stations and automatically assigns their frequencies to the buttons in Bank [4], from strongest to weakest. It comes in handy when trying to find local stations while driving.

1. Press button [6] and select a band.

2. Holding down button [13] for about two seconds will start BSM search. At this time, "BSM" will flash on the display.

3. The frequency display will return once BSM search is complete, and frequencies are assigned to buttons 1 through 6 in Bank [4].

- At the end of the BSM search, the displayed frequency is that assigned to button 1 of Bank [4].
- If there are fewer than six strong stations in the area, some of the buttons in Bank [4] will not be assigned frequencies, so they will retain any frequencies assigned to them previously.
- BSM search may take as long as 30 seconds in areas where there are few strong stations.
- You can cancel BSM search by pressing button [13] again.

Preset Scan Tuning

This function lets you automatically monitor the stations assigned to the preset buttons.

1. Press the button [16], and "SCAN" [24] will light up and the preset number [26] flash.
Each station assigned to the buttons in Bank [4] will be automatically tuned in for about eight seconds.
2. When you hear a station that you like, press button [16] again to cancel preset scan tuning and remain at that station.

Adjusting Seek Sensitivity

The seek tuning function of this tuner lets you select between a local setting for reception of strong stations only, and a DX (distant) setting for reception of weaker stations. The local setting also has four seek tuning sensitivity levels for FM and two levels for AM to match local conditions.

Changing the Local Seek Sensitivity

1. Use button [6] to select a band.
2. Hold down the button [15] for more than two seconds, and the display will show you the current local seek sensitivity for about five seconds.
3. While the local seek sensitivity remains on the display, press the (+) side of button [7] to increase the sensitivity level, and the (-) side to decrease the level as shown below.
FM: L-1 = L-2 = L-3 = L-4
AM: L-1 = L-2

The L-4 setting allows reception of only the strongest stations, while lower settings let you receive progressively weaker stations.

- The display of local seek sensitivity returns to the frequency when about 5 seconds have elapsed after the change of sensitivity.

Switching between Local and DX

Press button [15] to switch between Local and DX (distant) seek tuning. When "LOC" [22] is shown on the display, seek tuning is performed with the local seek sensitivity. Otherwise, seek tuning is performed with the DX seek sensitivity.

Manual Tuning

Use manual tuning when stations are too weak to be picked up by seek tuning.

1. Press both (+) and (-) sides of button [7] at the same time to clear "SEEK" [23].
2. Each press of the (+) side of button [7] increases the frequency in 0.2 MHz steps in the FM band, 10 kHz in the AM band. Pressing the (-) side of button [7] decreases the frequency. Holding down either side of button [7] changes the frequency at high speed.

Switching between FM Stereo and Mono

Generally, it is best to allow the "Super Tuner" function to automatically set the optimum listening conditions. When stereo broadcasting is received, "STEREO" [28] will appear on the display. When there is a large amount of noise, you can press button [17] for clearer mono reception ("MO" [27] will appear on the display).

5. USING THE TAPE DECK

GEH-M2000 does not include this tape deck function.

Parts Identification

(Fig. 1)

- [2] Eject
- [3] Cassette Door
- [5] Fast Forward, Rewind/Direction Change
- [9] Music Search (KEH-M5500)
- [10] Metal (KEH-M5500)
- [11] Dolby B NR (KEH-M5500)
- [19] Display

(Fig. 3)

- [31] Dolby B NR (KEH-M5500)
- [32] Metal (KEH-M5500)
- [33] Direction
- [34] Music Search (KEH-M5500)

About cassette tapes

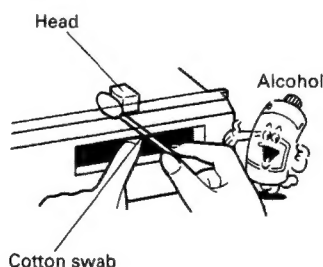
- Do not use tapes longer than C-90-type (90 min.) cassettes. Longer tapes can interfere with tape transport.
- Storing cassettes in areas directly exposed to sunlight or high temperatures can distort them and subsequently interfere with tape transport.



- Store unused tapes in a tape case where there is no danger of them becoming loose or being exposed to dust.

Cleaning the head

If the playback head becomes dirty, sound quality will suffer. Periodically (once or twice a month) clean the head with a cotton swab soaked with alcohol.



Listening to a tape

1. Insert the cassette tape into the slot [3], and power will be turned on and the tape begin being played back.

At this time, the tape running direction indicator [33] will light up.

2. Adjust volume and tone (see page 4).

3. To eject the cassette tape, press the button [2].

- Be sure to eject the tape when the front panel is removed, or the vehicle's ignition is turned OFF. Leaving the tape in the unit can deform the pinch roller causing wow and flutter during tape playback.

- A loose or warped label on a cassette tape may interfere with the eject mechanism of the unit or cause the cassette to become jammed in the unit. Avoid using such tapes or remove such labels from the cassette before attempting use.
- Do not try to eject the cassette immediately after insertion, as it will cause malfunction. Wait a few seconds.

Changing Program

Push the fast forward and rewind buttons [5] together to switch from one side of the tape to the other (from Side A to Side B or vice versa).

Using Fast Forward and Rewind

Since the transport can be in either direction, both the left and right high-speed tape transport buttons [5] can be regarded as fast forward/rewind buttons. For fast forward, press the high-speed tape transport button [5] that corresponds to the direction that is shown by the direction indicator [33]. When the end of the tape is reached, playback will automatically begin from the opposite side of the tape (Auto-reverse). For rewind, press the button [5] that is opposite that of the direction shown by the direction indicator [33]. When the end of the tape is reached, playback will automatically begin from the beginning of the same side of the tape (Auto-replay).

When you release fast forward/rewind, lightly press button [5] located on the opposite side of the one you pressed to fast forward or rewind.

- "◀▶" [33] will flash when the tape is fast forwarding or rewinding.

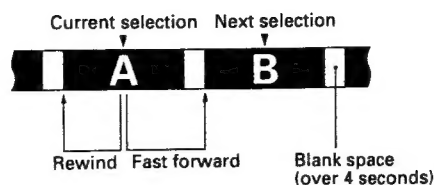
Using Music Search (KEH-M5500)

Returning to the beginning of selection A
Press the button [9] ("MS" [34] appears) and then the high-speed tape transport button [5] for the direction opposite that is shown by the direction indicator [33]. Playback will automatically start from the beginning of selection A.

Moving from selection A to selection B
Press the button [9] ("MS" [34] appears) and then the high-speed tape transport button [5] that corresponds to the direction shown by the direction indicator [33]. Playback will automatically start from the beginning of selection B.

To enable regular fast forward/rewind operations, press the button [9] again ("MS" [34] turns off) to turn the function OFF. The following errors will cause the music search function to operate improperly, even though the unit is not malfunctioning.

- Unrecorded "blank" portions between selections less than 4 seconds — the blank portion cannot be detected by the unit.
- Pauses in recorded conversations longer than 4 seconds — the unit reads these as blanks between selections.
- Portions recorded at very low volume for more than 4 seconds — the unit reads these as blanks between selections.



Dolby B NR (KEH-M5500)

To hear a tape recorded using a Dolby NR system, press the button [11]. ("□□" [31] appears.)

Tape Selector (KEH-M5500)

When using metal tapes and chrome tapes, press button [10]. ("MTL" [32] appears.)

Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "DOLBY" and the double-D symbol □□ are trademarks of Dolby Laboratories Licensing Corporation.

6. USING THE CLOCK DISPLAY

Parts Identification (Fig. 1)

[4] Minute Adjustment/Hour Adjustment

[14] Clock

[19] Display

Display the Time

The clock is displayed while button [14] is depressed. Press button [14] again to turn off the clock display.

- The clock display can be used only when the main unit is in operation.
- When the clock display is ON, pressing other buttons will release the clock display. The display will be restored approximately 25 seconds after the button operation has been completed.

Adjusting the Time

Adjusting Hours

While holding down button [14], Press button 1 from the buttons shown on [4], to adjust the hour setting of the clock. Each press button 1, advances the hour setting by one hour, and holding it down advances the setting at high speed.


Adjusting the Minutes

While holding down button [14], Press button 2 from the buttons shown on [4], to adjust the minute setting of the clock. Each press button 2, advances the minute setting by one minute, and holding it down advances the setting at high speed.

7. PLAYING COMPACT DISCS

Precautions When Using the Multi-Play CD Control

- This model can be used as controller when an optionally available multi-play CD player (e.g., CDX-M30) is included in the system. Programmed play does not operate when used with the multi-CD player CDX-M70 or CDX-M100.
- See pages 7 through 8 for details on operation procedures.
- The Owner's Manual for the multi-play CD player does not contain an explanation of the CD controls for this unit. Read this Owner's Manual for details on proper operation and keep it handy for later reference.
- Immediately after the multi-play CD player is connected to the system, it may not operate properly. In this case, press the clear button of the main unit and the clear button of the multi-play CD player, and attempt operation again.

The Magazine Type Multi-Play CD players with  mark and the Mazazines with the same mark are compatible for 5-inch (12 cm) discs.

Listening to the Compact Disc

Parts Identification (Fig. 1)

- [4] Disc Number search
- [6] Program Clear
- [7] Track Number Search/Fast Forward, Reverse
- [12] Source Selector
- [15] ITP (Instant Track Program)
- [16] Highlight Scan
- [17] Mode
- [19] Display

(Fig. 4)

- [35] Disc
- [36] Music Repeat/Disc Repeat
- [37] Highlight Scan
- [38] Random Play
- [39] Track Number
- [40] Disc Number

KEH-M5500, KEH-M4500

The unit incorporates priority cassette tape play. The unit will not switch to multi-play CD player while a tape is inserted, so be sure to eject the tape when you wish to listen to CD play.

1. Press button [12] to change the display to the Multi-Play CD player mode and to begin disc play.

Each press of button [12] changes the mode as follows: Multi-Play CD player — tuner — OFF

2. Use the Disc Number Search function to select a disc.

Select the desired disc by pressing one of the buttons in Bank [4]. The number of the disc selected appears at position [40] on the display.

- This indicator HHHH flashes on the display and playback is automatically cut when the temperature around the multi-play CD player becomes too high. This protects the laser mechanism from serious damage. Listen to the radio unit the temperature returns to normal. (This functions only when your unit is used with a Multi-Play CD player CDX-M100.)

Using Highlight Scan

Highlight Scan is designed to enable you to conveniently scan all pieces of music contained in the disc by playing 10 seconds each at your designated point of time after the start of the music. The starting time of play is set at one minute in factory. Therefore, the Highlight Scan begins one minute after the start unless you designate it otherwise.

When you do not want to change the factory-set time:

- When used in conjunction with the old type Multi-Play CD Players [CDX-M70] or [CDX-M100], the place where playback starts in Highlight Scan is fixed as the start of each track. Also, it is not possible to adjust this time setting.
1. Press button [16] ("T.SCAN" [37] appears).
 2. The contained pieces of music will be played in sequence for 10 seconds each one minute after the beginning.
 3. Press button [16] again when your selected piece comes, and it will continue to play. At this point, the Highlight Scan discontinues to operate.

- The previous function automatically resumes when a piece of music with which Highlight Scan began returns.

Changing the starting time of Highlight Scan

When you want to set the starting time of the Highlight Scan to 30 seconds:

1. Press button [7], (+) and (–) sides simultaneously, and time numerals will be displayed.
 2. Keep pressing either (+) or (–) side of button [7] until the numerals reaches 30.
 3. Hold down button [16] for two or more seconds, and "T.SCAN" [37] appears and the Highlight Scan will begin. 30 seconds after the start of the next piece of music.
- The starting time of Highlight Scan can be designated at ten or tens of seconds only. A tenth or tenths of seconds can be disregarded.
 - If a piece of music ends before your designated point of time at which Highlight Scan starts, the scanning is performed for its beginning 10 seconds.
 - If a piece of music lasts less than 10 seconds, so does the Highlight Scan.
 - You may wish to change the starting time longer without suspending the function. You may do so, however, only to a relatively long-playing piece of music because, as a matter of course, the time cannot be set so as to come after the end of the music.

- Display [35] indicates whether the magazine is loaded or empty.
- If the number at position [40] on the display does not change when you press a button in Bank [4], it means that there is no disc loaded in that tray.

3. Use Track Number search to select a track.

Confirm that Track Number is shown at Position [39] on the display. If not, press the (+) and (–) sides of button [7] at the same time. Press the (+) side of button [7] to increase the number at Position [39], or the (–) side to decrease the number. Holding either side of button [7] down changes the track number at high speed.

4. Adjust volume and tone (see page 4).

5. To stop disc play, press button [12].

At another press, the normal play resumes from about where it stopped.

- If you stopped operating a Multi-Play CD Player CDX-M100 in the middle of music and then restarted, the player resumes playing from the very beginning of the section with which you stopped.

Note:

- After you press a button in Bank [4], it may take some time before play begins due to the time necessary to load and set the disc in the mechanism.

Using Disc Repeat, Music Repeat and Random Play

Each Press of button [17] causes the mode to change as follows:

Music Repeat ("RPT" [36] appears) — Random Play ("RDM" [38] appears) — Normal

If button [17] is pressed for 2 or more seconds, the mode changes to Disc Repeat ("D.RPT" [36] appears).

- When Disc Repeat or Music Repeat are not operational, the compact discs contained in the magazine will play sequentially from beginning to end, and then start from disc 1 again.

Music Repeat

1. To repeat the music you are listening to, select the repeat mode ("RPT" [36] appears).
2. To cancel music repeat, press button [17] to turn off "RPT" [36].

Random Play

1. To play music randomly, select the random play mode ("RDM" [38] appears). Once the current track has been played, the microprocessor will randomly select the next and subsequent tracks.
 2. To cancel random play, press button [17] to turn off "RDM" [38].
- Since selections are played in random order, the same selection may be played twice in succession.
 - When a Multi-Play CD Player CDX-M100 is used, random selection is made from a disc being played.

Disc Repeat

The Disc Repeat function causes the same disc to play repeatedly.

1. Press button [17] for 2 seconds or more while the desired disc is being played. The mode will change to Disc Repeat mode ("D.RPT" [36] appears).
2. To cancel Disc Repeat, again, press button [17] for 2 seconds or more and turn off "D.RPT" at [36].

Using Fast Forward and Reverse

1. Press simultaneously both (+) and (-) sides of the button [7]. At this time the display will show the amount of elapsed disc play time.
 2. Press the (+) side of button [7] for fast forward, and the (-) side for reverse.
- Sound is output during fast forward and reverse operations.
 - The display counts down the number of seconds between tracks if the spacing is rather large ("00"-"01").

Using Program Play

This function lets you program the play sequence of all of the tracks contained on the compact discs loaded in the magazine.

- The ITP function will not operate when connected to either the CDX-M70 or CDX-M100.
- Up to 32 selections can be programmed for a single magazine.
- Up to 16 different magazines (max. 32 selections per magazine) can be programmed individually. If you program more than 16 magazines, old programs are automatically replaced by new ones.
- Automatic Magazine Program Selection (AMPS) retrieves the right program from the memory automatically, as soon as a preprogrammed magazine is loaded. Preprogrammed magazines are identified using the CD in the tray 1 of the magazine. Therefore be sure that tray 1 contains a disc.

Programming

1. While a disc is playing, select the desired disc and track you want to program.
 2. Press button [15] to memorize the track being played. ("P-01" is indicated during the memory step.)
 3. Procedures 1 and 2 above can be repeated until a maximum of 32 steps are programmed.
- If the 33rd step is selected, the "FULL" display will appear, indicating that no more selections can be programmed.
 - When there are already a number of selections in the memory, the new selection will be added to the last step.

Playing Back the Program

1. Hold down button [15] for 2 seconds to begin play in the programmed sequence, while a disc is playing. ("PP01" is indicated during the step where the program is played.)
 2. Press button [15] again to cancel program play.
- Pressing the (+) or (-) side of button [7] during programmed play makes it possible to search for a specific step number from among the programmed selections.
 - Program play returns to the first step in the programmed sequence when it reaches the end of the program.
 - When playing a magazine that has no program recorded, "PP00" will be displayed for approximately 3 seconds.

Erasing the Program

It is possible to erase one or all selections of the program in the magazine being played.

To erase a single selection:

1. Press the (+) or (-) side of button [7] during programmed play, and search for the specific step you wish to erase.
 2. Press button [6] for at least 2 seconds and the selection being played will be erased.
- After the particular track has been erased, the tracks in the next position move from down up one notch in the order from the previous position.

To erase the entire program:

While a disc is playing, hold down button [6] for at least 2 seconds. All the programs in the magazine being played will be erased. ("P-CL" is indicated on the display.)

Error Mode

Should an abnormality occur — for example, Multi-Play CD Player cannot be operated, or the music stops during CD playback — the main unit will indicate an error mode. (Example: "E-11")

While the unit is in error mode, a number will be displayed indicating the cause of the error, so please check the items listed below. If you cannot fix the problem after checking the cause of the error, please contact your dealer or your nearest Pioneer service center.

Note:

When using the Multi-Play CD Player, CDX-M100, CDX-M70, CDX-M50 and CDX-M40, an error will be displayed only in the form of "E-00", without the number which indicated the cause of the error. When this display appears, please check items 11, 12, 14, or 30 listed below.

Display	Cause	Treatment
11, 12	Dirt or a scratch on the disc stops the laser beam from being able to focus.	Wipe the dirt off the disc. Exchange the disc if it is scratched.
	The disc has been inserted upside down.	Confirm that the disc has been inserted right side up.
14	The disc has been inserted upside down.	Confirm that the disc has been inserted right side up.
	An unrecorded compact disc (CD-R), can be recorded on once is being used.	When you use a CD-R, load one that has been recorded on.
30	Dirt or a scratch on the disc hinders the track number search function.	Wipe the dirt off the disc. Exchange the disc if it is scratched.
80	An empty magazine is loaded in the multi-play CD player.	Insert a disc in the magazine.
10, 12, 50, 60, 70, A0	Electrical or mechanical system fault.	Turn the car ignition switch OFF, then ON again, or change to other sources except CD playback, and then to CD playback again. If the error indication does not disappear, contact your dealer or your nearest Pioneer service station.

- When error numbers not mentioned above are indicated, refer to the owner's manual accompanying the multi-play CD player.

8. CONNECTING THE UNITS

Note:

- Before making final connections, make temporary connections then operate the unit to check for any connecting cord problems.
- Refer to the owner's manual for details on connecting the various cords of the power amp and other units, then make connections correctly.
- Be sure to connect the memory power supply lead (orange) to a terminal that is always supplied with power regardless of the vehicle's ignition switch position. If this connection is made incorrectly or is forgotten, the unit will not work at all.
- Don't pass the orange lead through a hole into the engine compartment to connect to the battery. This will damage the lead insulation and cause a very dangerous short.
- Since a unique BPTL circuit is employed, never wire so the speaker leads are directly grounded or the left and right speaker \ominus leads are common.
- Speakers connected to this unit must be high-power types possessing minimum rating of 30W and impedance of 4 to 8 ohms. Connecting speakers with output and/or impedance values other than those noted here can damage the speakers.

- When the unit is mounted in a vehicle whose ignition switch does not have the ACC (accessory) position as shown in Fig. 6, be sure to connect the red lead of the unit to the terminal controlled by the ignition switch ON/OFF position. If you do not, the vehicle battery may go flat when you leave your vehicle for several hours.



ACC position
Fig. 5



No ACC position
Fig. 6

(Fig. 7)

1. Power amp (sold separately)
2. Connecting cords with RCA pin plugs (sold separately)
3. Blue
4. Green
5. Gray
6. Green/black
7. Gray/black
8. Green/red
9. Gray/red
10. Front/left speaker
11. Front/right speaker
12. Rear/left speaker
13. Rear/right speaker
14. White
15. Red
16. Rear out
17. Antenna jack
18. Blue
19. To system control terminal of the power amp or Auto-antenna relay control terminal (Max. 300 mA 12 V DC).
20. Fuse holder
21. Fuse resistor
22. Black (ground)
23. To vehicle (metal) body.
24. Red
25. To electric terminal controlled by ignition switch (12 V DC) ON/OFF.
26. Orange
27. To terminal always supplied with power regardless of ignition switch position.
28. Multi-play CD player terminal
29. Multi-play CD player (sold separately)
30. Use this for connections when you have the separately available amplifier.
31. With a 2 speaker system, connect to the 2 speakers in the front or the rear.

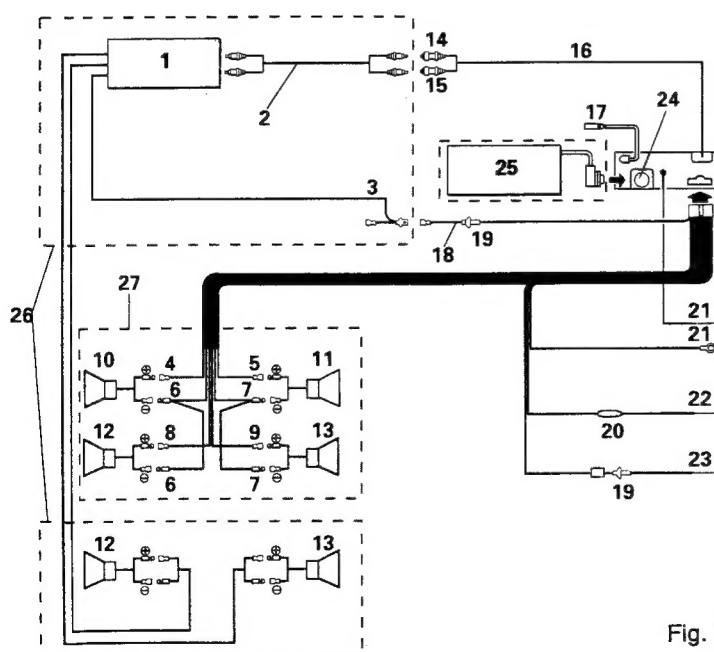


Fig. 7

9. SPECIFICATIONS (KEH-M5500/UC, KEH-M4500/UC)

General

Power source.....	14.4 V DC (10.8 — 15.6 V allowable)
Grounding system	Negative type
Max. current consumption	6 A
Dimensions	
(chassis)	178(W) × 50(H) × 150(D) mm [7(W) × 2(H) × 5-7/8(D) in.]
(nose)	188(W) × 58(H) × 18(D) mm [7-3/8(W) × 2-1/4(H) × 3/4(D) in.]
Weight	
(KEH-M5500, KEH-M4500)	1.4 kg (3.1 lbs.)
(GEH-M2000)	1.0 kg (2.2 lbs.)

Amplifier

Continuous power output is 10 W per channel min. into 4 ohms, both channels driven 50 to 15,000 Hz with no more than 5% THD. Maximum power output 25 W x 2/15 W x 4 (EIAJ)
Load impedance 4Ω (4 — 8Ω allowable)
Preout output level/impedance 500 mV/1 kΩ
Tone controls (bass) ±10 dB (100 Hz)
(treble) ±10 dB (10 kHz)
Loudness contour +12 dB (100 kHz), +7 dB (10 kHz)
(volume: -30 dB)

Tape player (KEH-M5500, KEH-M4500)

Tape	Compact cassette tape (C-30 — C-90)
Tape speed	4.76 cm/sec. (+0.14 cm/sec., -0.05 cm/sec.)
Fast forward/rewind time	Approx. 100 sec. for C-60
Wow & flutter	0.13% (WRMS)
Frequency response	
(KEH-M5500)	Metal: 40 — 17,000 Hz (±3 dB)
(KEH-M4500)	40 — 14,000 Hz (±3 dB)

Stereo separation	45 dB
Signal-to-noise ratio (KEH-M5500)	
..... Metal: Dolby B NR IN: 63 dB (IHF-A network)	
..... Dolby NR OUT: 55 dB (IHF-A network)	
(KEH-M4500)	52 dB (IHF-A network)

FM tuner

Frequency range	87.9 — 107.9 MHz
Usable sensitivity	11 dBf (1.0µV/75Ω, mono, S/N:30 dB)
50 dB quieting sensitivity	16 dBf (1.7µV/75Ω, mono)
Signal-to-noise ratio	70 dB (IHF-A network)
Distortion	0.3% (at 65 dBf, 1 kHz, stereo)
Frequency response	30 — 15,000 Hz (±3 dB)
Stereo separation	40 dB (at 65 dBf, 1 kHz)
Selectivity	70 dB (2ACA) (±400 kHz)
Three-signal intermodulation (desire signal level)	50 dBf (two undesire signal level: 110 dBf)

AM tuner

Frequency range..... 530 — 1,710 kHz
Usable sensitivity..... 18 μ V (25 dB) (S/N: 20 dB)
Selectivity..... 50 dB (\pm 10 kHz)

These specifications were determined and are presented in accordance with specification standards established by the Ad Hoc Committee of Car Stereo Manufacturers.

Note:

Specifications and the design are subject to possible modification without notice due to improvements.

10. DISASSEMBLY

● Removing the case

1. Insert and turn a pair of tweezers at locations indicated by arrows to remove the case.

● Removing the grille assy

1. Press the detach button, and then pull grille assy.

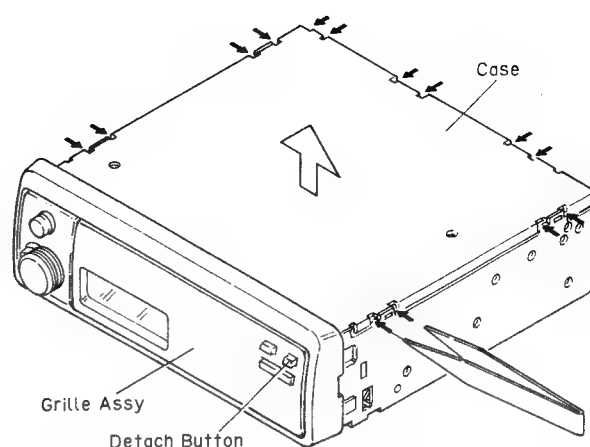


Fig. 8

● Removing the cassette mechanism assy

1. Remove the four screws.
2. Disconnect the connector.
3. Remove the cassette mechanism assy.

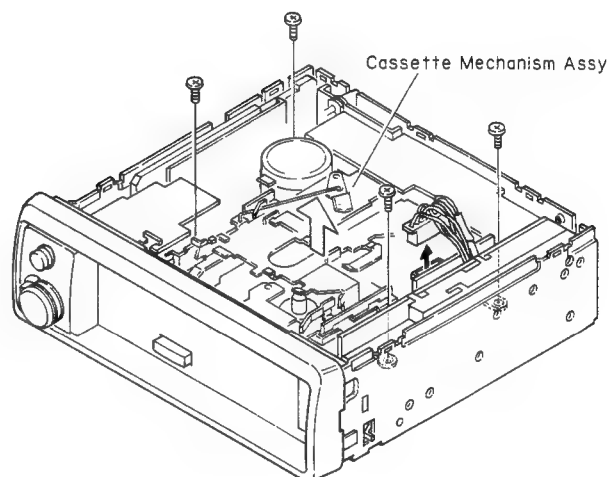


Fig. 9

● Removing the panel assy

1. Disconnect a connector.
2. Remove the three knobs.
3. Press tabs at four locations indicated by arrows.
4. Remove the panel assy.

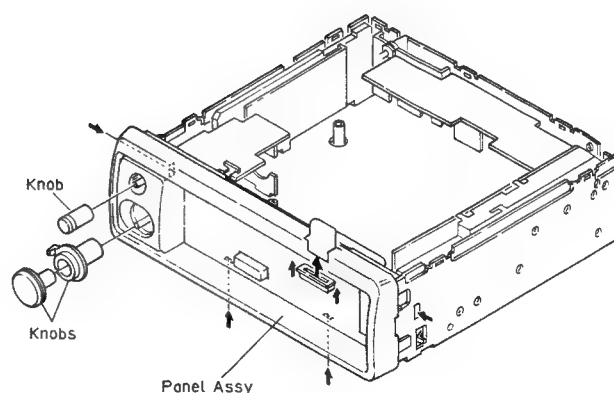


Fig. 10

● Removing the chassis unit

1. Remove the eight screws.
2. Unbend the claw indicated by arrow until straight.
3. Remove the chassis unit.

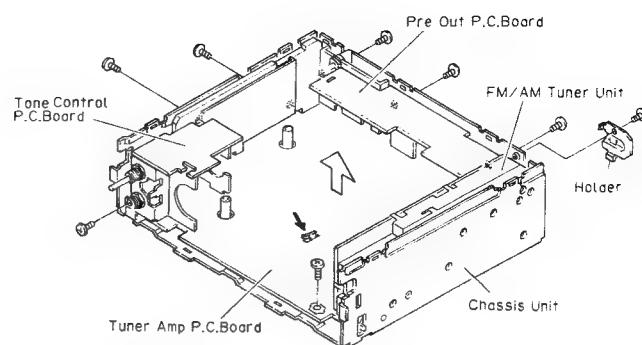


Fig. 11

11. BLOCK DIAGRAM

KEH-M5500

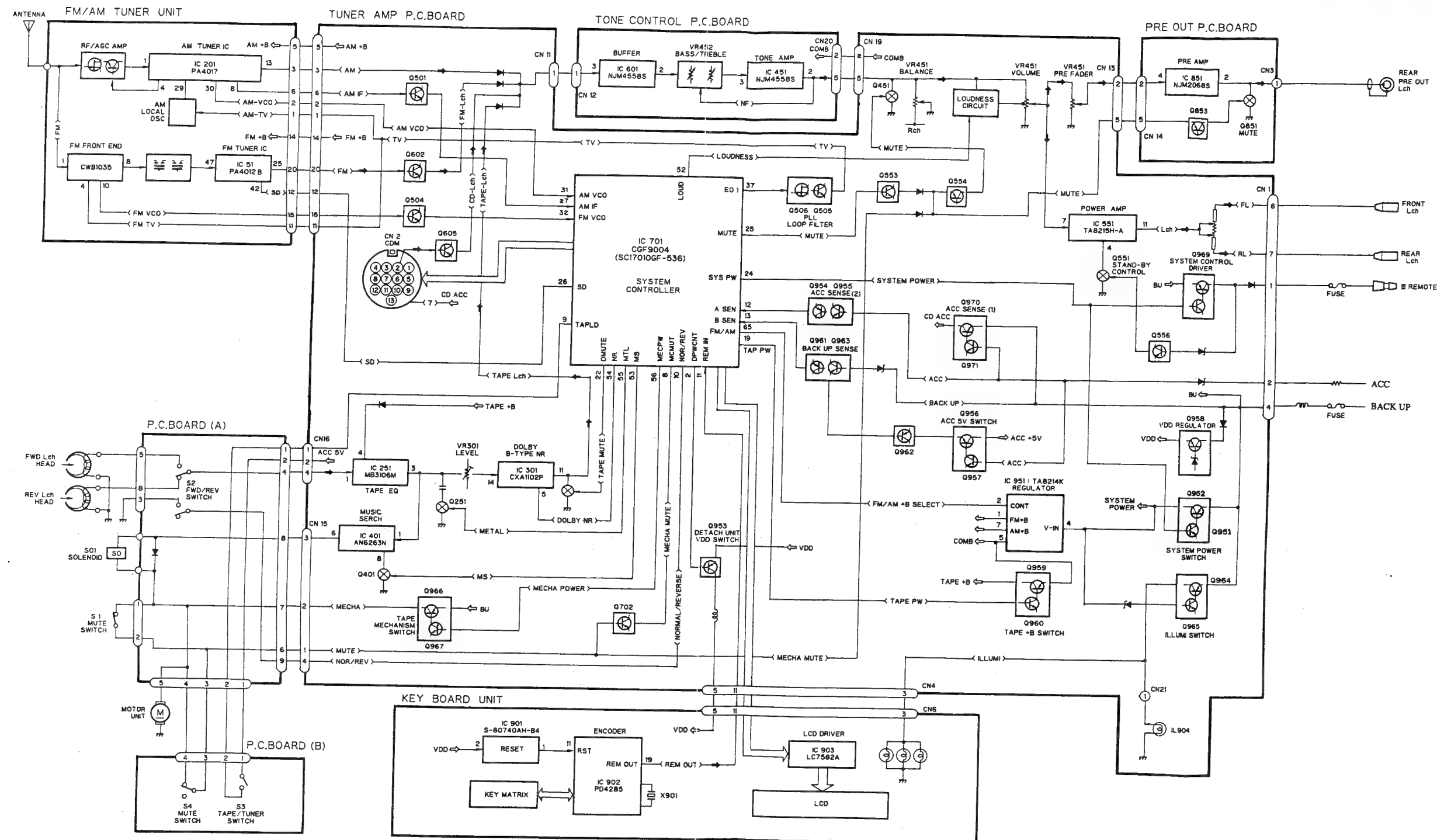


Fig. 12

12. ADJUSTMENT

● Test Mode

Test mode is mainly used in adjustment of CD multi-players.

● Switching to test mode

- 1. Turn off the Back-up and ACC off.
- 2. Discharge VDD.
- 3. Turn the Back-up and ACC on while pressing the 4&6 keys together.

● Canceling test mode

While pressing the CD multi-player clear button, switch this unit back-up and ACC OFF.

● Key functions during test mode

The CD multi-player, deck, and tuner are selected by the SOURCE button.

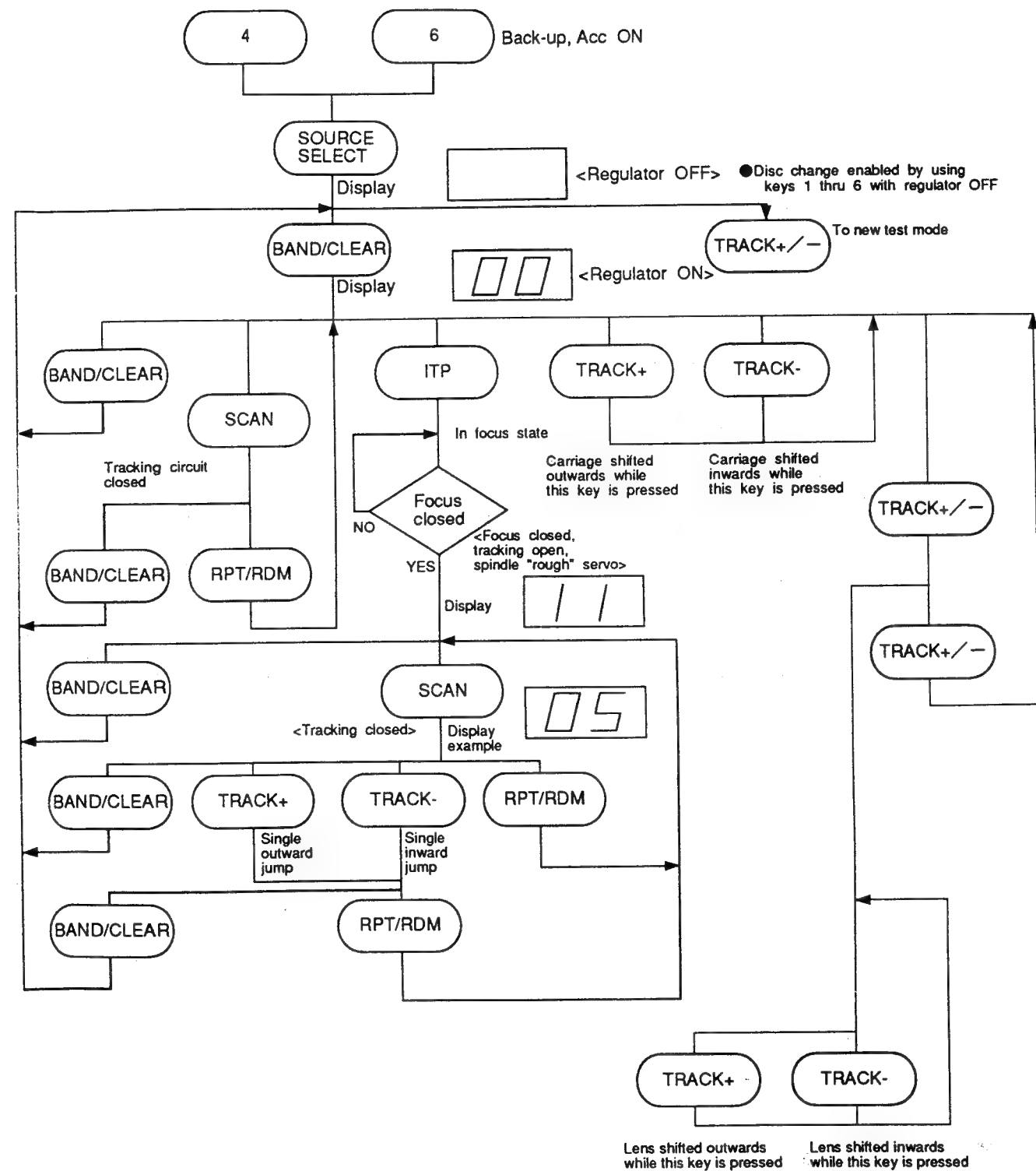
a) CD multi-player

key	Function
BAND / CLEAR	Regulator ON / OFF
TRACK +	FWD kick
TRACK -	REV kick
SCAN	Tracking close
RPT / RDM	Tracking open
ITP	Focus close
TRACK +/-	Carriage/tracking switching

b) Deck and tuner

No corresponding function. Normal operation executed.

● Flow Chart



● Connection Diagram

NOTICE:

Select C1 so that total capacity of 80pF is attained from the direction of the receiver jack.
Z: Output impedance of SSG.

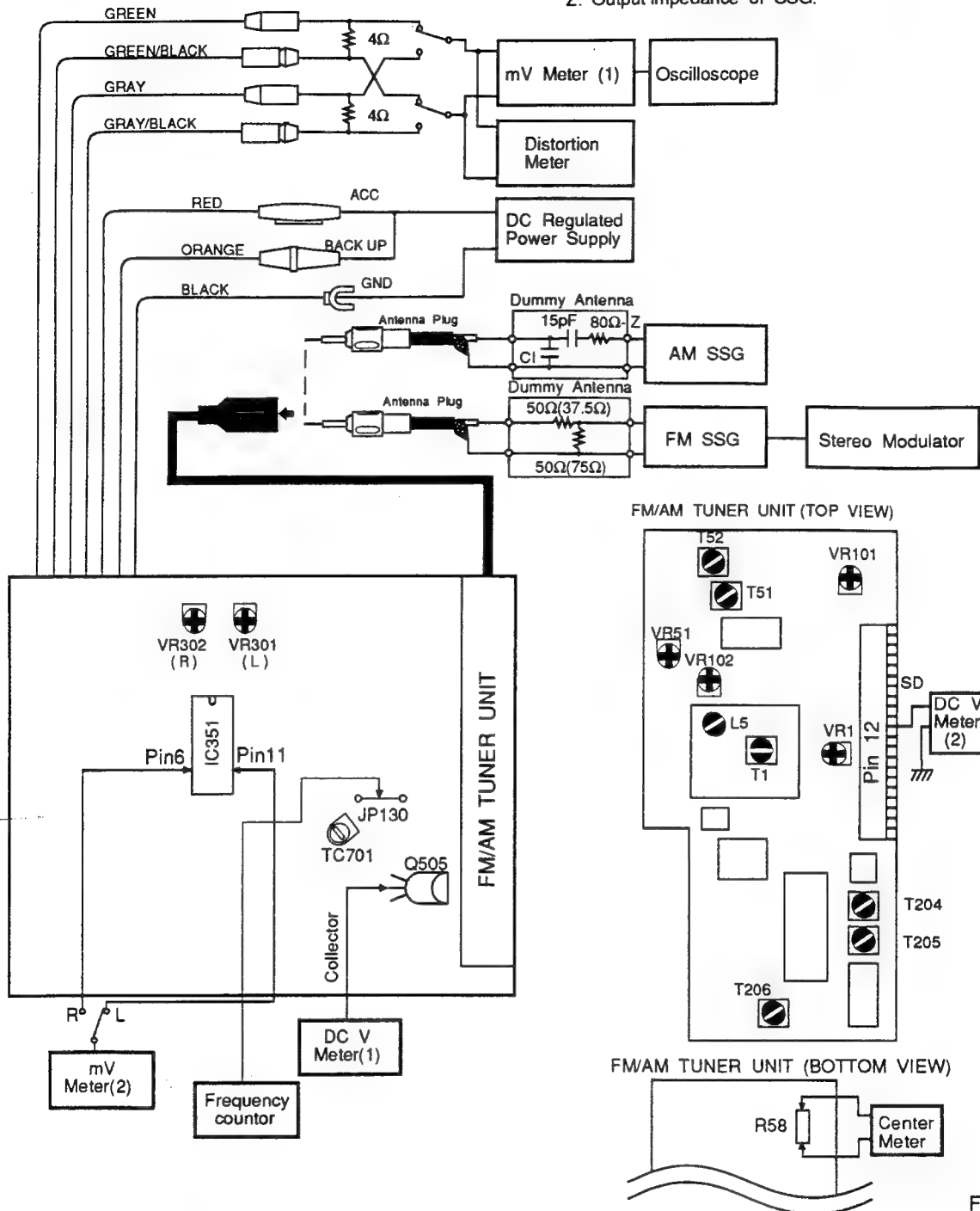


Fig. 13

CLOCK ADJUSTMENT

ESmodel when tuning step at 9kHz.

No.	Adjusting Point	Adjustment Method
1	AM Tuner Mode	Display:UC,US model 1,710kHz Display:ES model 1,602kHz
2	TC701	Frequency Counter:UC,US model 12,420kHz \pm 20Hz Frequency Counter:ES model 12,312kHz \pm 20Hz

FM ADJUSTMENT ※ Stereo MOD.: 1kHz, L+R=90%, Pilot=10%
 * () : ES Model

	No	FM SSG(400Hz,100%)		Displayed Frequency (MHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(MHz)	Level(dB μ V)			
IF	1	98.1	60	98.1	T51	Center Meter:0
	2	98.1	60	98.1	T52	Distortion Meter:Minimum
	3	Repeat No.1-2 alternately so that the center meter indicates the 0 output and distortion meter indicates minimum output.				
Front End	1			107.9 *(108)	L5	DC V Meter (1):6.2 \pm 0.2V
	2			87.9 *(87.5)		Verify that DC V Meter(1) is 2.1 \pm 0.6V
	3	98.1	8	98.1	T1	Oscilloscope:Optimum Symmetry
	4	98.1※	60	98.1	T1	Distortion Meter:Minimum Rotate T1 less than \pm 90
Soft Mute	1	98.1	60	98.1		mV Meter(1):A dB
	2	98.1	9	98.1	VR102	mV Meter(1):A-3dB
ARC	1	98.1※	34	98.1	VR101	mV Meter(1):Separation 5dB
SD	1	98.1	15	98.1	VR51	DC V Meter(2):Approx. 5V
	2	98.1	14	98.1		Verify that DC V Meter (2) is approx. 0V.
	3	98.1	55	98.1	VR1	DC V Meter(2):Approx. 5V
		Connect collector of Q2 to GND. Connect DC regulated power supply to pin 3 of FM Front End through resistor(330 Ω). Add 4.3v from DC regulated power supply.				
	4	98.1	54	98.1		Verify that DC V Meter (2) is approx. 0V.

AM ADJUSTMENT *() :ES model when tuning step at 9kHz

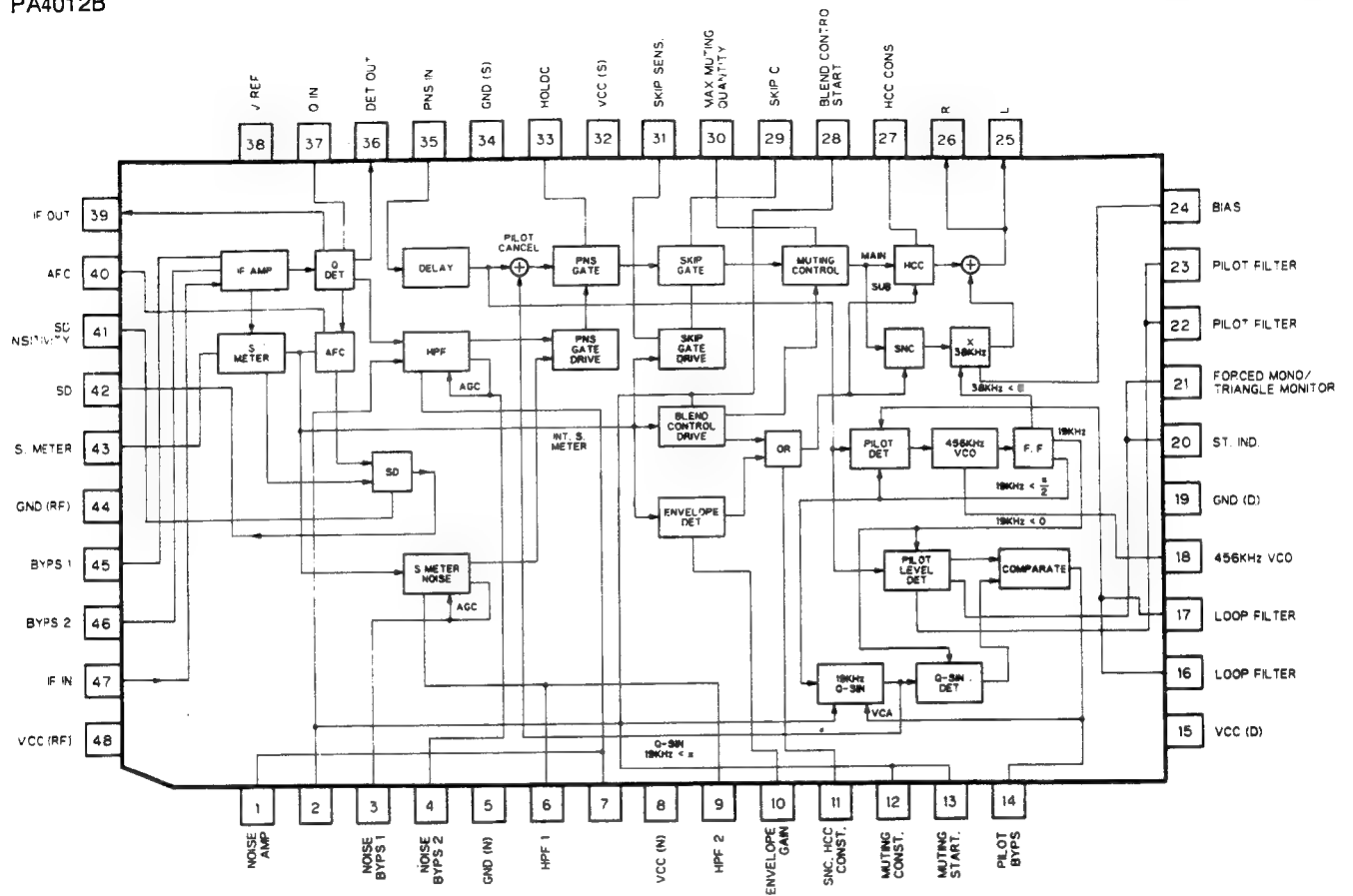
	No	AM SSG(400Hz,30%)		Displayed Frequency (kHz)	Adjusting Point	Adjustment Method (Switch Position)
		Frequency(kHz)	Level(dB μ V)			
Tuning Volt	1			1,710 *(1,602)	—	Verify that DC V Meter (1) is less than 6.5V.
	2			530 *(531)	—	Verify that DC V Meter (1) is more than 2.0V.
IF	1	1,000 (999)	15	1,000 (999)	T204,205, 206	mV Meter(1):Maximum

DOLBY NR ADJUSTMENT
 (KEH-M5500/UC,KEH-M580/US,KEH-M5550/ES)

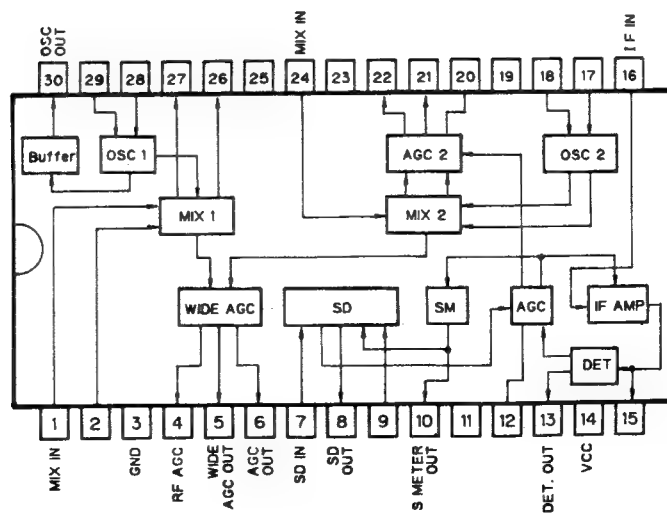
No	Cassette Tape	Adjusting Point	Adjustment Method (Switch Position)
1	NCT-150(400Hz,200nwb/m)	VR301(Lch)VR302(Rch)	mV Meter(2):-6dBs \pm 1dB (DOLBY NR Switch:OFF)

● ICs

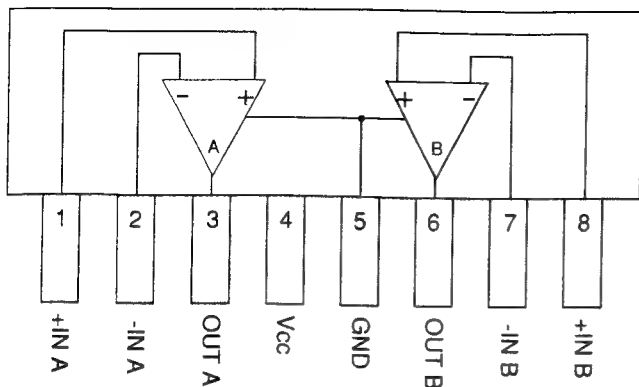
PA4012B



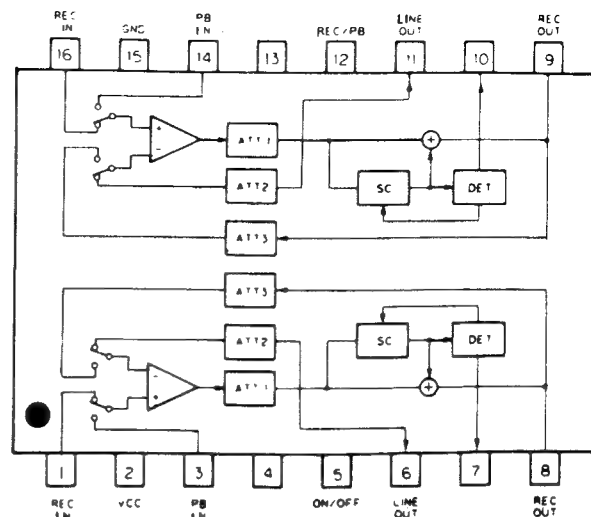
PA4017



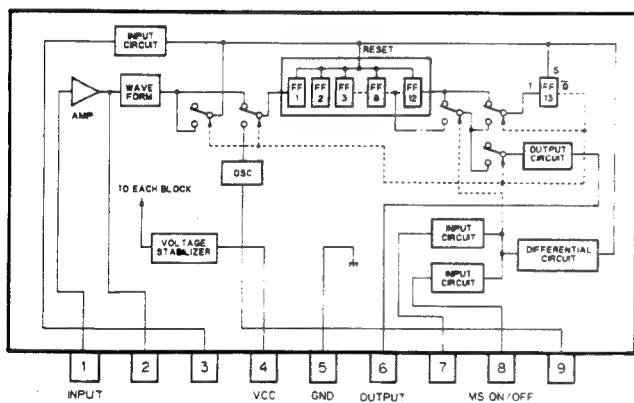
MB3106M



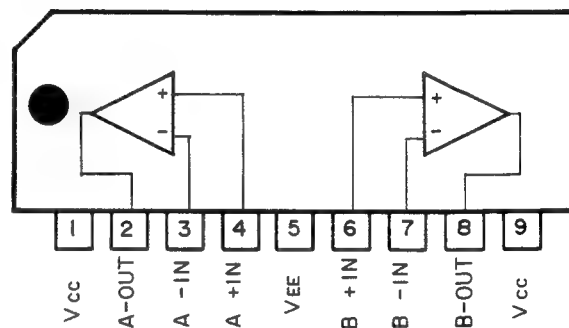
CXA1102P



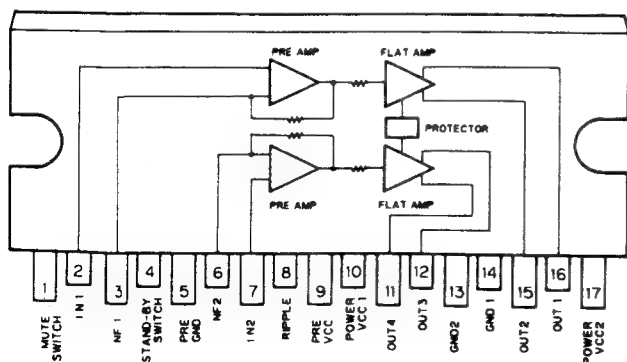
AN6263N



NJM4558S

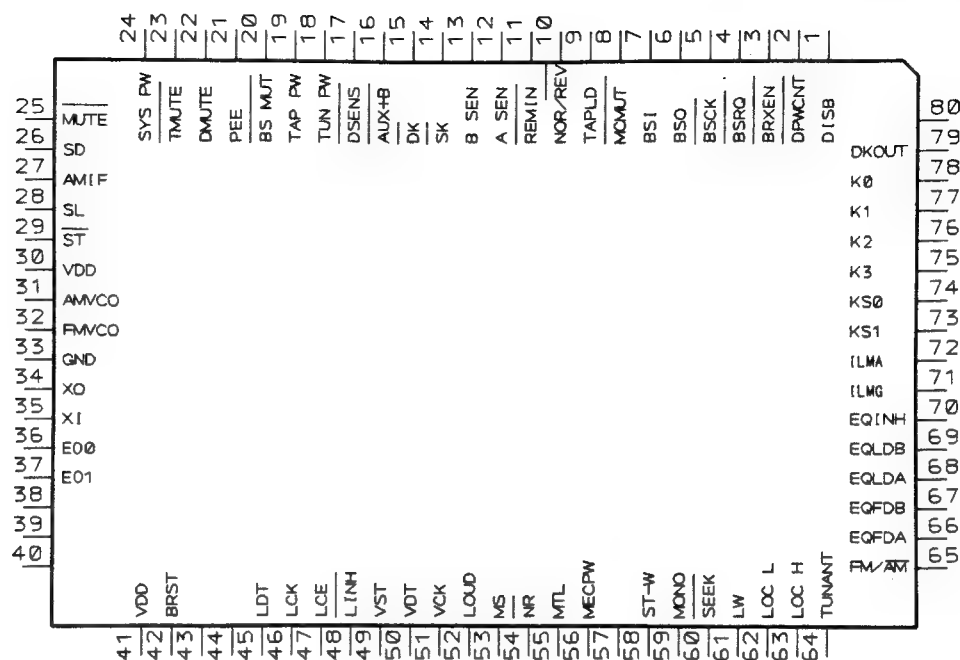


TA8215H-A



*GGF9004 (SC17010GF-536)

IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.



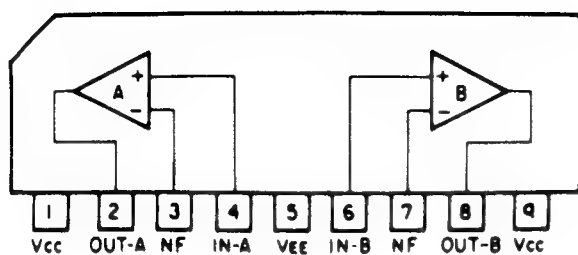
● Pin Functions (GGF9004)

Pin	Pin name	I/O	Output Format	Function
1	DISB	output	C	
2	DPMCNT	output	C	EJECT/REPLACE control output ("L":REPLACE)
3	BRXEN	input/output	N	Reception enable
4	BSRQ	input/output	N	Polling request
5	BSCK	input/output	C	Serial clock input / output
6	BSO	output	C	Serial data output
7	BSI	input	C	Serial data input
8	MCMUT	input	C	Mechanism mute request
9	TAPLD	input	C	Tape loading input
10	NOR/REV	input	C	Tape direction
11	REMIN	INT1	C	Key input (Down Edge:interruption)
12	A SEN	INT0	C	Acc sense input
13	B SEN	CE	C	Back up sense input
14	SK	input	C	SK signal input
15	DK	input	C	DK signal input
16	AUX+B	input	C	AUX+B input
17	DSENS	input	C	Detach sense input
18	TUN PW	output	N	Not used
19	TAP PW	output	N	Deck power
20	BS MUT	output	N	Bus mute output
21	PBE	output	C	Not used
22	DMUTE	output	C	Deck mute output
23	TMUTE	output	C	Not used
24	SYS PW	output	C	System power output
25	MUTE	output	C	Mute
26	SD	input	C	FM IF IN
27	AMIF	input	C	AM IF IN
28	SL	input	C	Signal level input
29	ST	input	C	Stereo input
30	VDD			

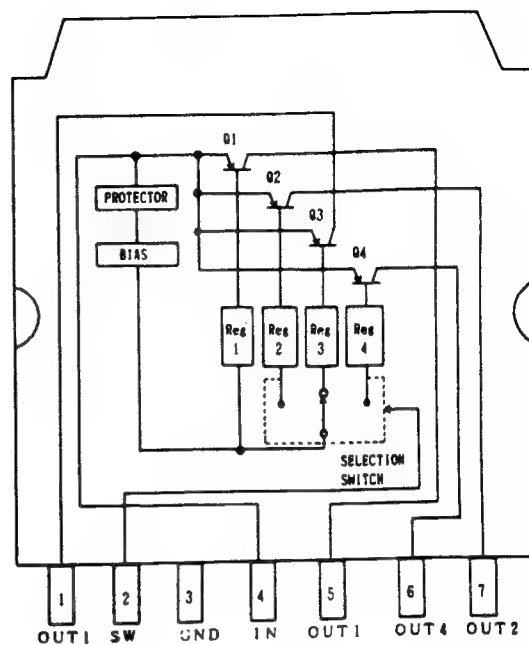
Pin	Pin name	I/O	Output Format	Function
31	AMVCO	input		AM VCO input
32	FMVCO	input		FM VCO input
33	GND			
34	XO	output	C	
35	XI	input	C	
36	EOO	output	C(3)	Not used
37	EOI	output	C(3)	
38				
39	NC			Not used
40				
41	VDD			
42	BRST	output	C	Terminal reset
43	NC			Not used
44				
45	LDT	output	C	LCD driver data
46	LCK	output	C	LCD driver clock
47	LCE	output	C	LCD driver CE
48	LINH	output	C	LCD driver INH
49	VST	output	C	Not used
50	VDT	output	C	Not used
51	VCK	output	C	Not used
52	LOUD	output	C	Loudness
53	MS	output	C	Music search output
54	NR	output	C	DOLBY B NR output ("L":ON)
55	MTL	output	C	METAL output
56	MECPW	output	C	Deck mechanism regulator control output
57	NC			Not used
58	ST-W	output	C	Not used
59	MONO	output	C	Forced mono output
60	SEEK	output	C	SEEK output pin Outputs low signal during SEEK operation.
61	LW	output	C	Not used
62	LOC L	output	C	Local L setup
63	LOC H	output	C	Local H setup
64	TUNANT	output	C	Not used
65	FM/AM	output	C	FM/AM select
66	EQFDA	output	C	Not used
67	EQFDB	output	C	Not used
68	EQLDA	output	C	Not used
69	EQLDB	output	C	Not used
70	EQINH	output	C	Not used
71	ILMG	output	C	Not used
72	ILMA	output	C	Not used
73	KS1	output	C	Model sense output
74	KS0	output	C	Destination selection output
75	K3	input	C	Key matrix data input
76	K2	input	C	Key matrix data input
77	K1	input	C	Key matrix data input
78	K0	input	C	Key matrix data input
79	DKOUT	output	C	SDK interruption output
80	NC			Not used

Output Format	Meaning
C	C-MOS
N	N channel open drain

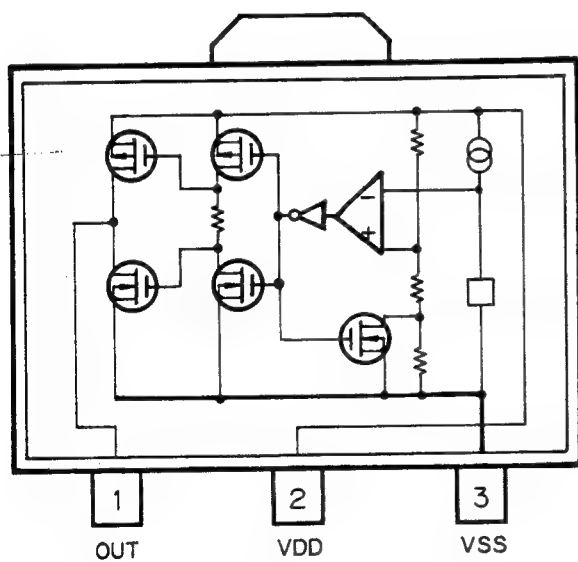
NJM2068S



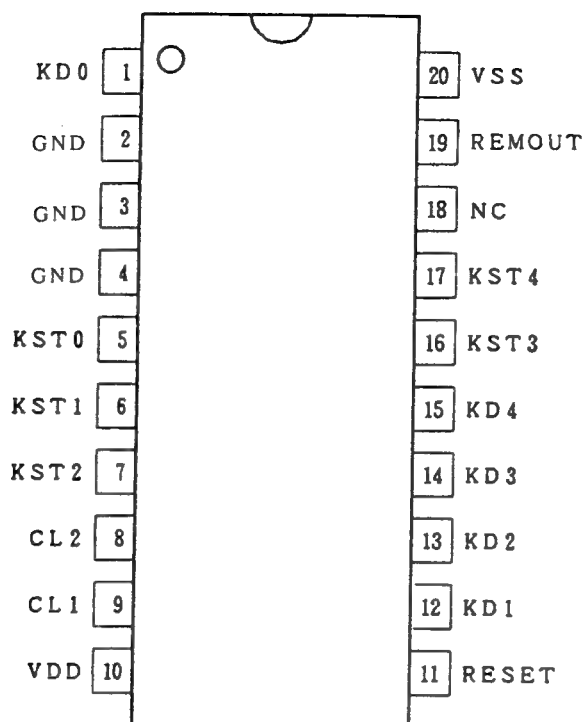
TA8214K



S-80740AH-B4



PD4285



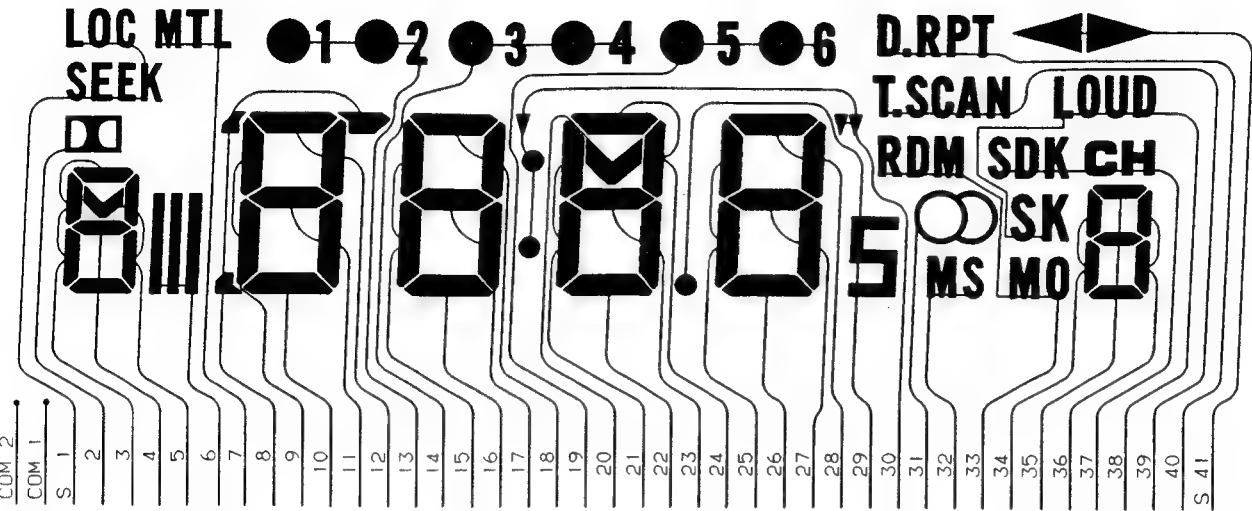
● Pin Functions (PD4285)

Pin No.	Pin Name	I/O	Output Format	Function and Operation
1	KDD	INPUT		Key return input
2—4	GND			GND
5—7	KST0—KST2	OUTPUT	NM	Key strobe output
8	CL2			System clock generator connector pin
9	CL1			System clock generator connector pin
10	VDD			
11	RESET	INPUT		Reset input
12—15	KD1—KD4	INPUT		Key return input
16, 17	KST3, KST4	OUTPUT	NM	Key strobe output
18	NC			
19	REMOUT	OUTPUT	NM	Remote controller data output
20	VSS			GND

Output Format	Meaning
NM	Middle resistivity N channel open drain

● LCD (CAW1168)

SEGMENT



COMMON

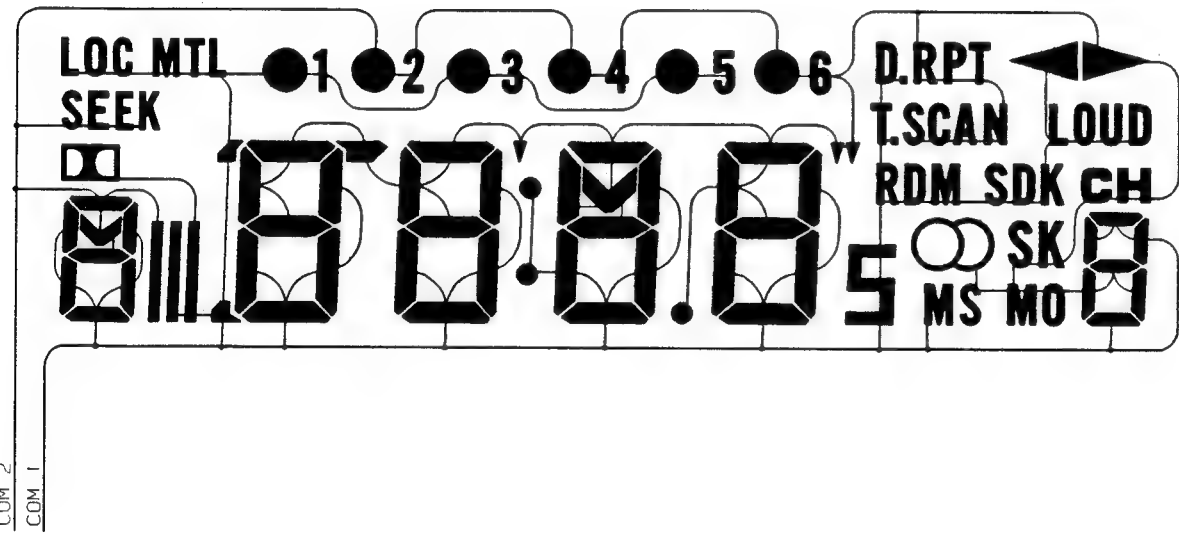


Fig. 14

● FM FRONT END (CWB1035)

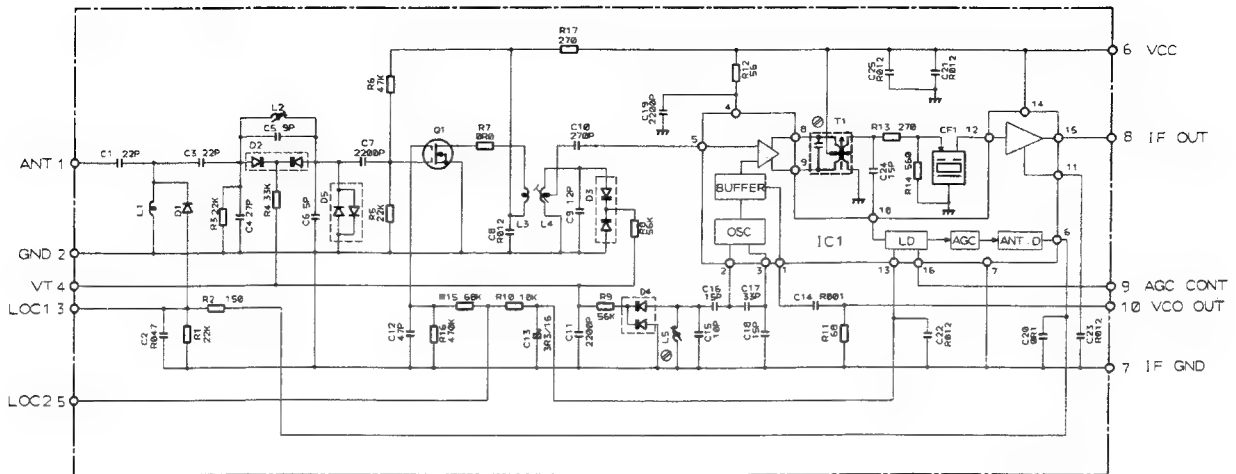
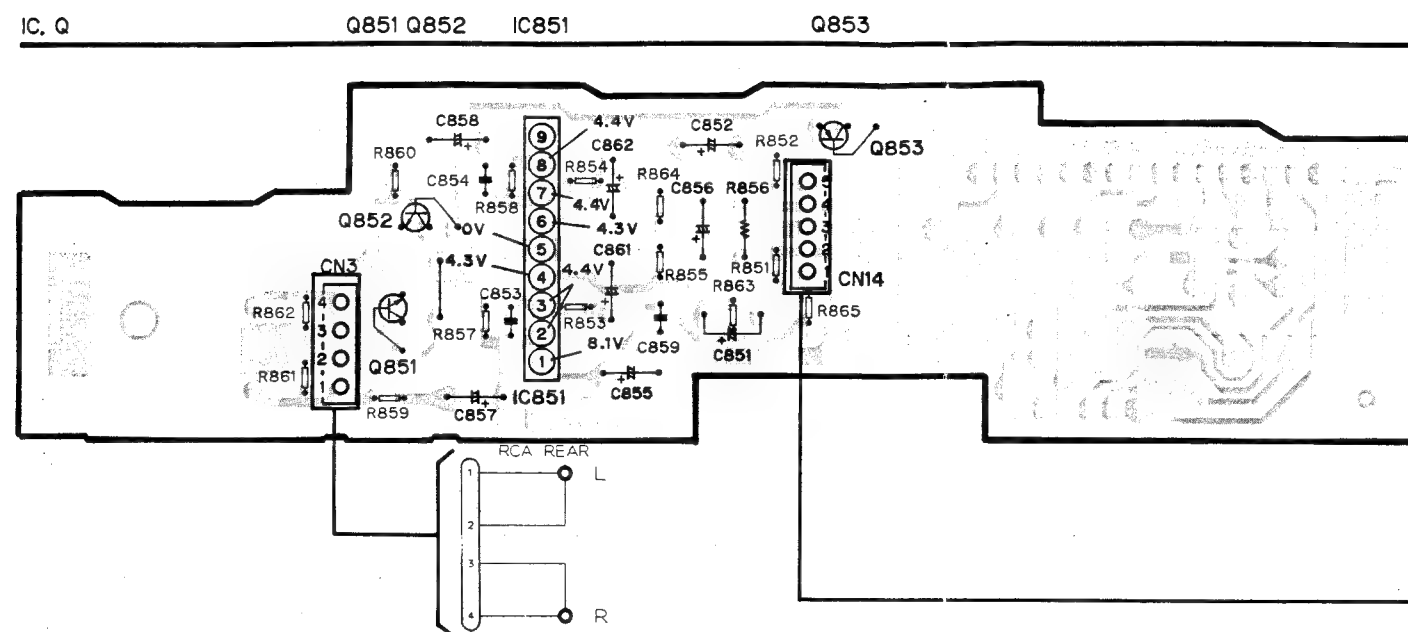


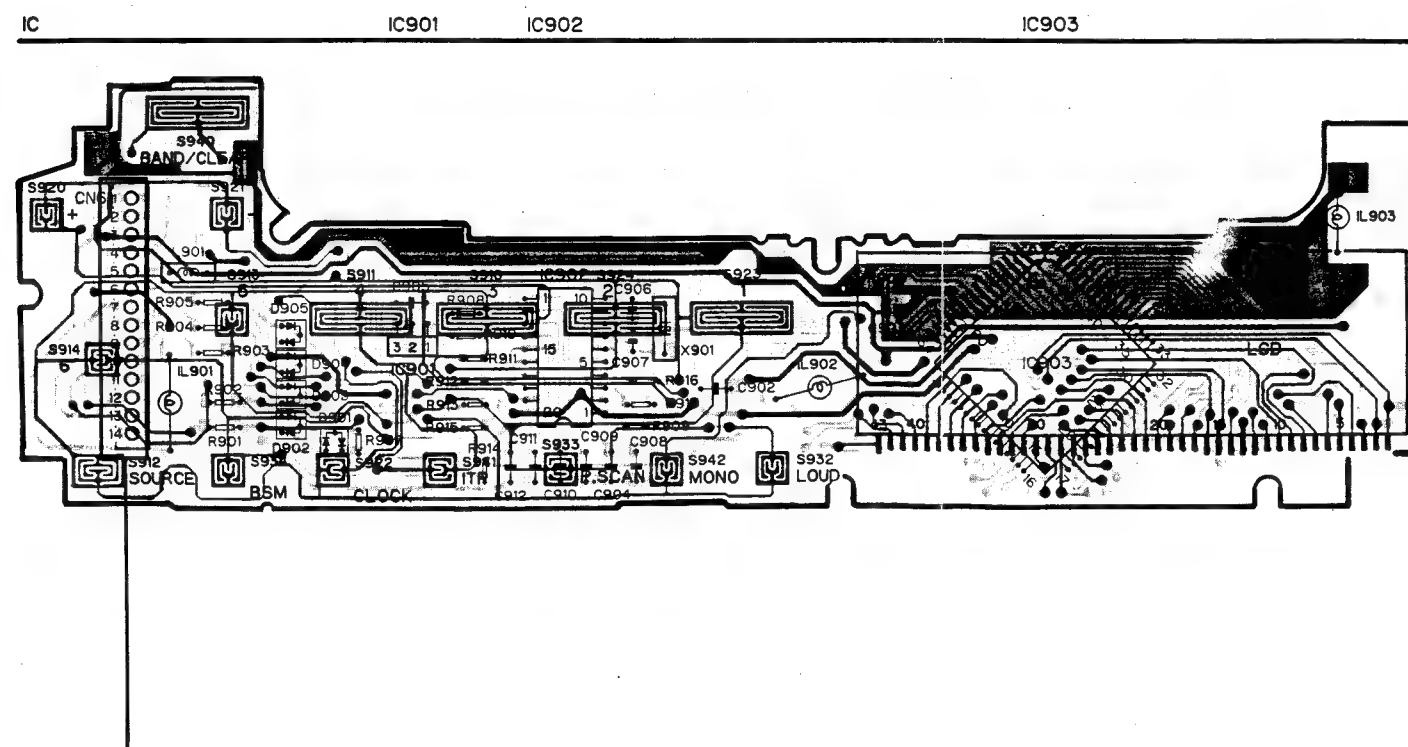
Fig. 15

13. CONNECTION DIAGRAM (KEH-M5500/UC, KEH-M580/US, KEH-M5550/ES)

PRE OUT P.C. BOARD



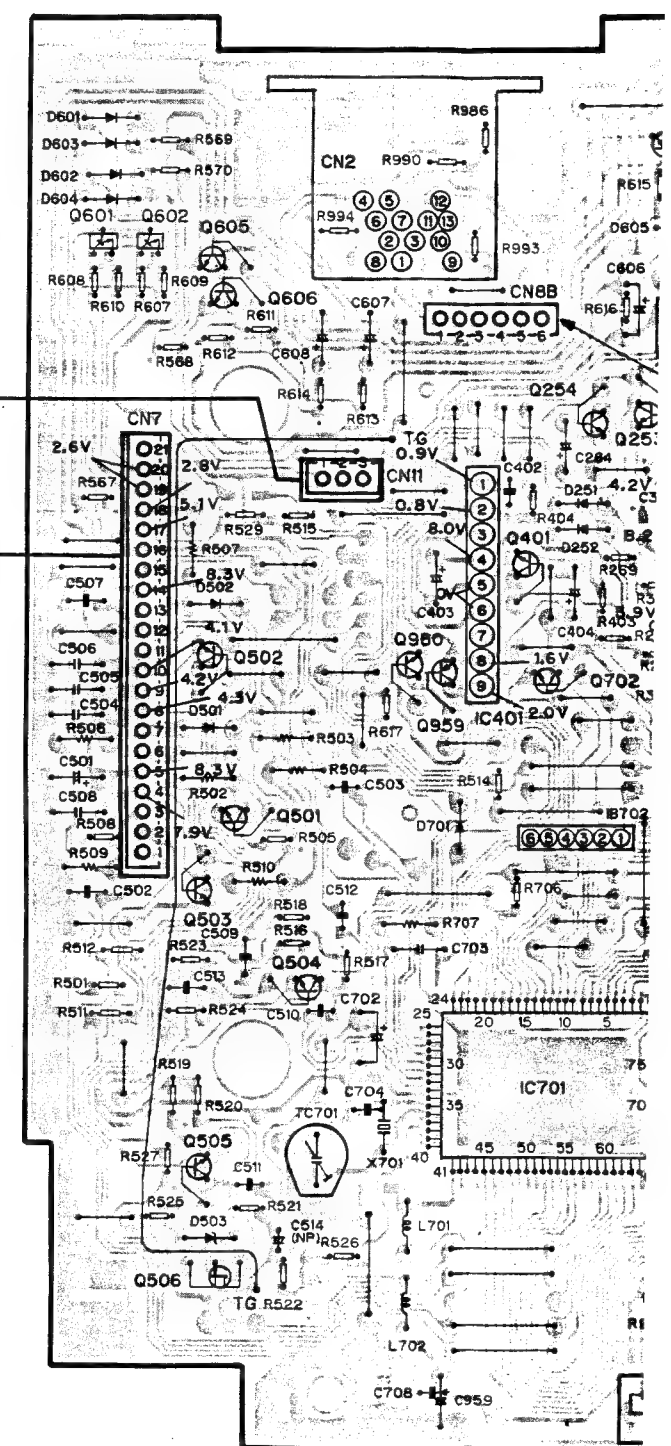
KEY BOARD UNIT



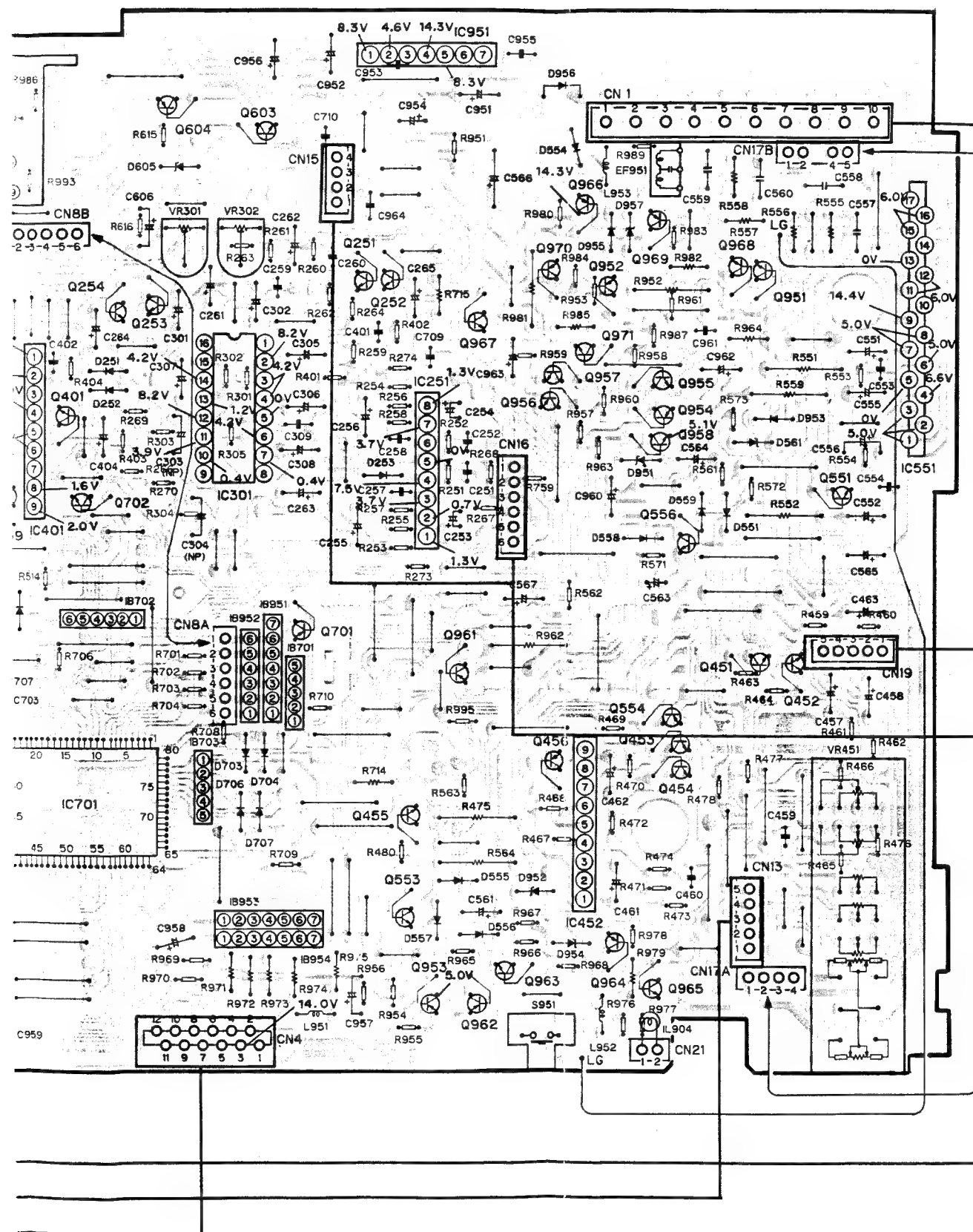
TUNER AMP P.C. BOARD

Q605 Q606
Q502 Q501
Q503 Q506
IC, Q Q601 Q602 Q505 Q504 Q960 Q959 IC401 IC701 Q25
ADJ. TC701 V

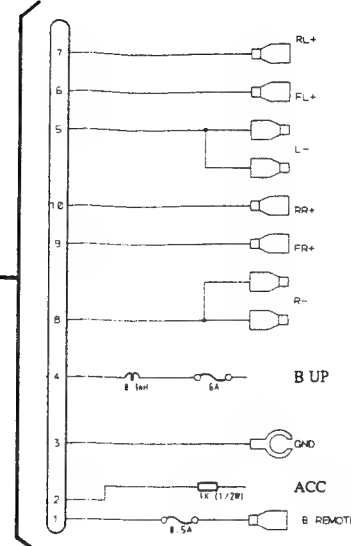
TO
FM/AM
TUNER UNIT



Q401 Q252 Q967 Q970 Q556 Q969 Q554
 Q702 Q604 Q603 IC251 IC951 Q957 Q952 Q955 Q453 Q968
 Q959 IC401 IC701 Q254 Q253 IC301 Q701 Q455 Q961 Q956 Q966 Q971 Q954 Q454 Q951
 VR301 VR302



TO
CASSETTE MECHANISM
ASSY



tone control p.c. board

IC IC451 IC601

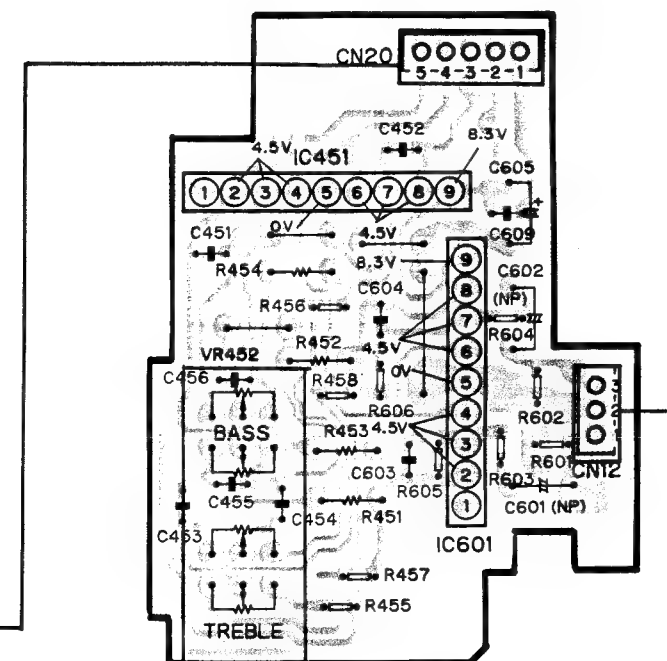
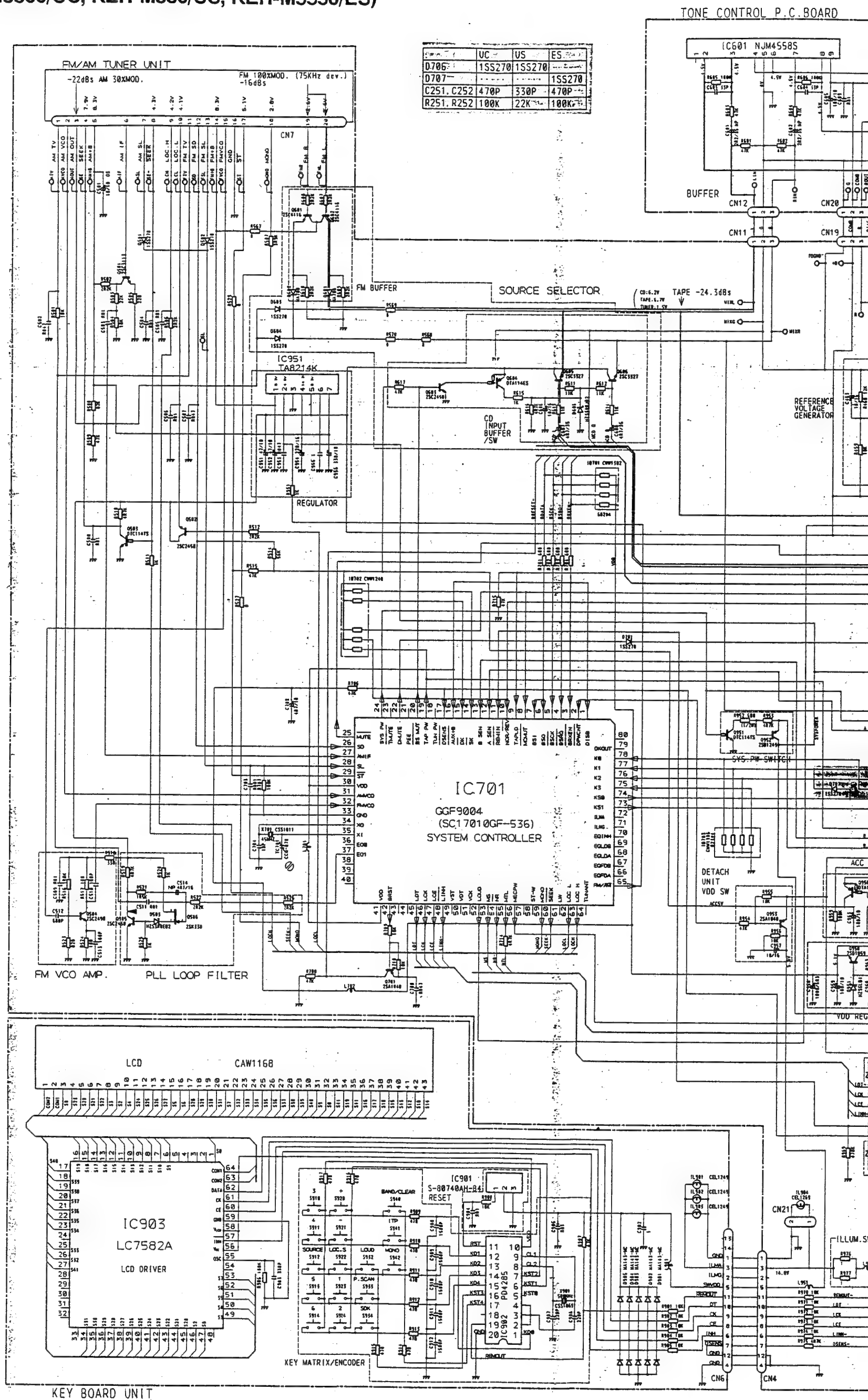


Fig. 16

14. SCHEMATIC CIRCUIT DIAGRAM (KEH-M5500/UC, KEH-M580/US, KEH-M5550/ES)



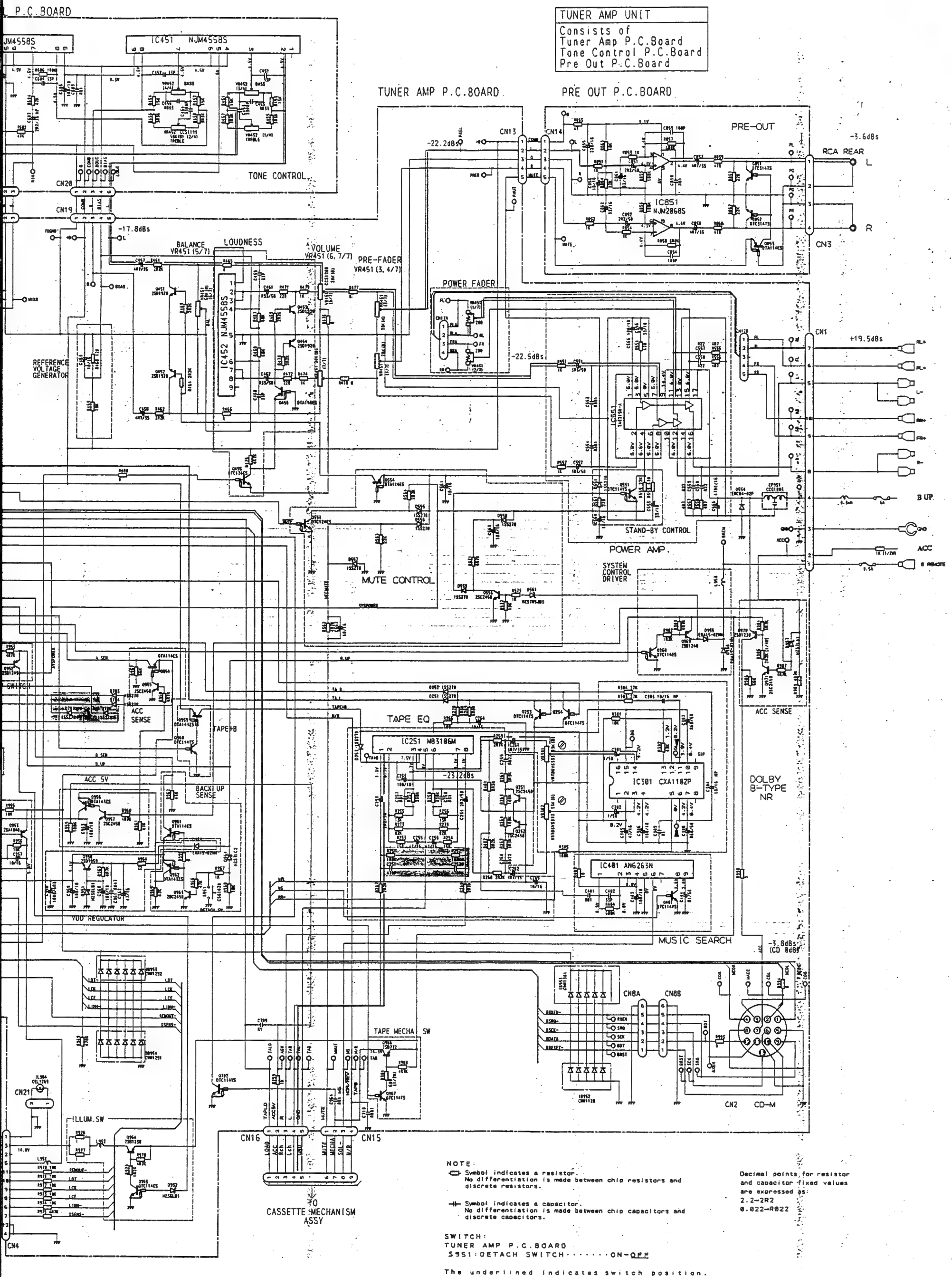


Fig. 17

15. SCHEMATIC CIRCUIT DIAGRAM (KEH-M4500/UC, X1H)

A

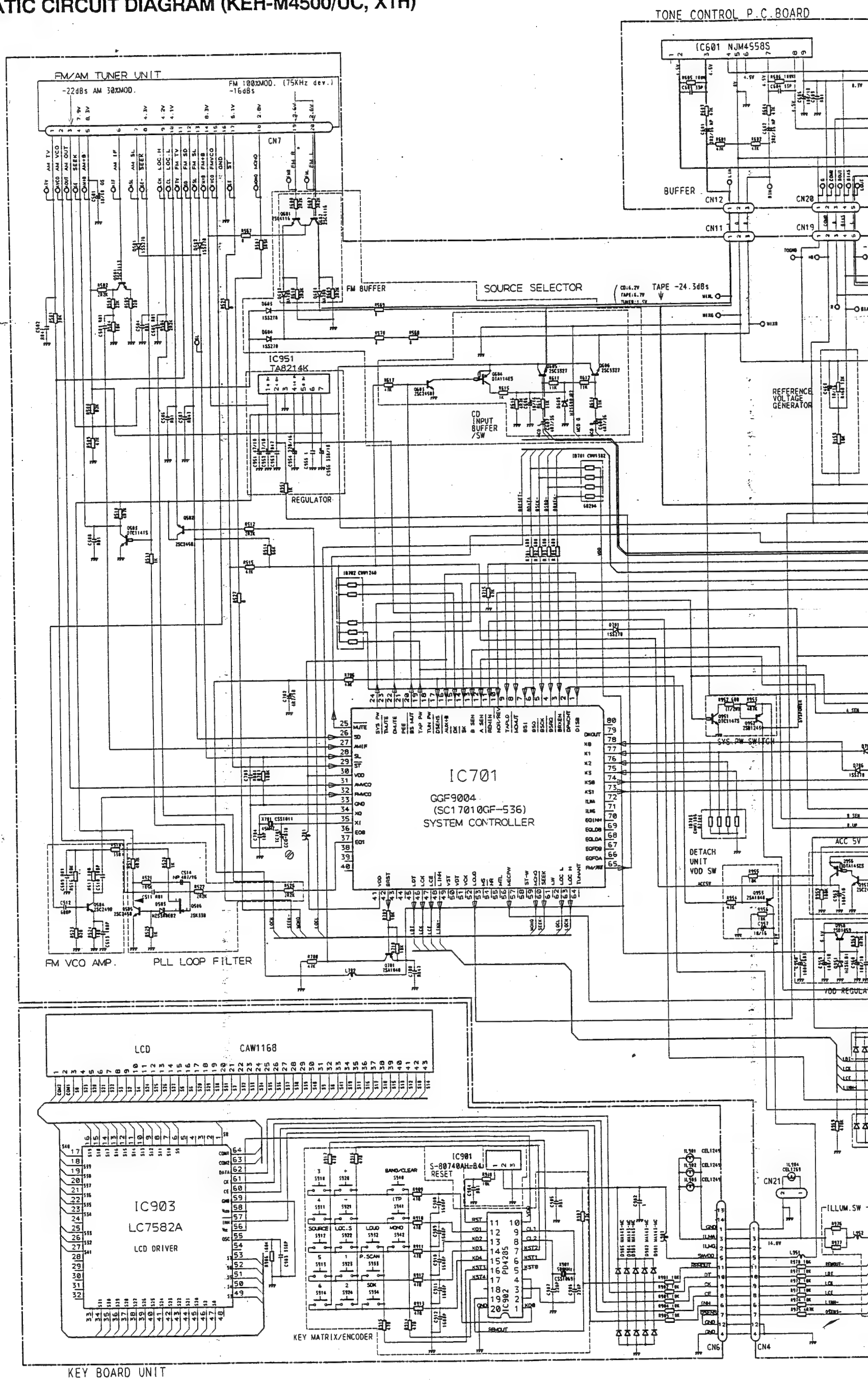
B

C

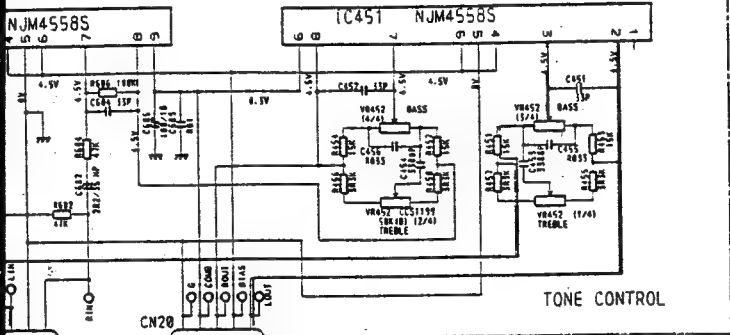
D

E

F



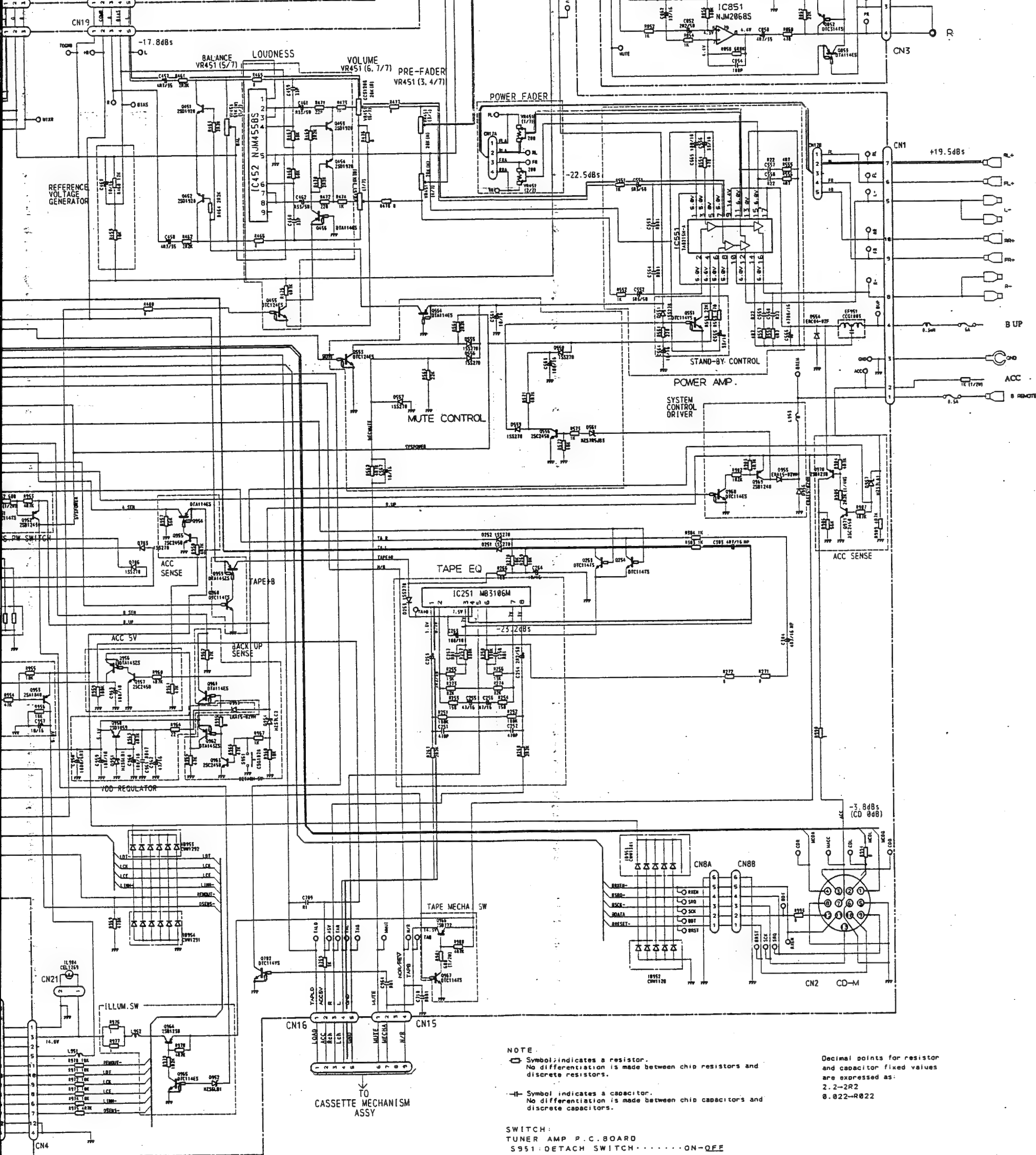
OL P.C. BOARD



TUNER AMP UNIT
Consists of
Tuner Amp P.C. Board
Tone Control P.C. Board
Pre Out P.C. Board

TUNER AMP P.C. BOARD

PRE OUT P.C. BOARD



NOTE:
□ Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
—□— Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.

SWITCH:
TUNER AMP P.C. BOARD
S951 DETACH SWITCH.....ON-OFF

The underlined indicates switch position.

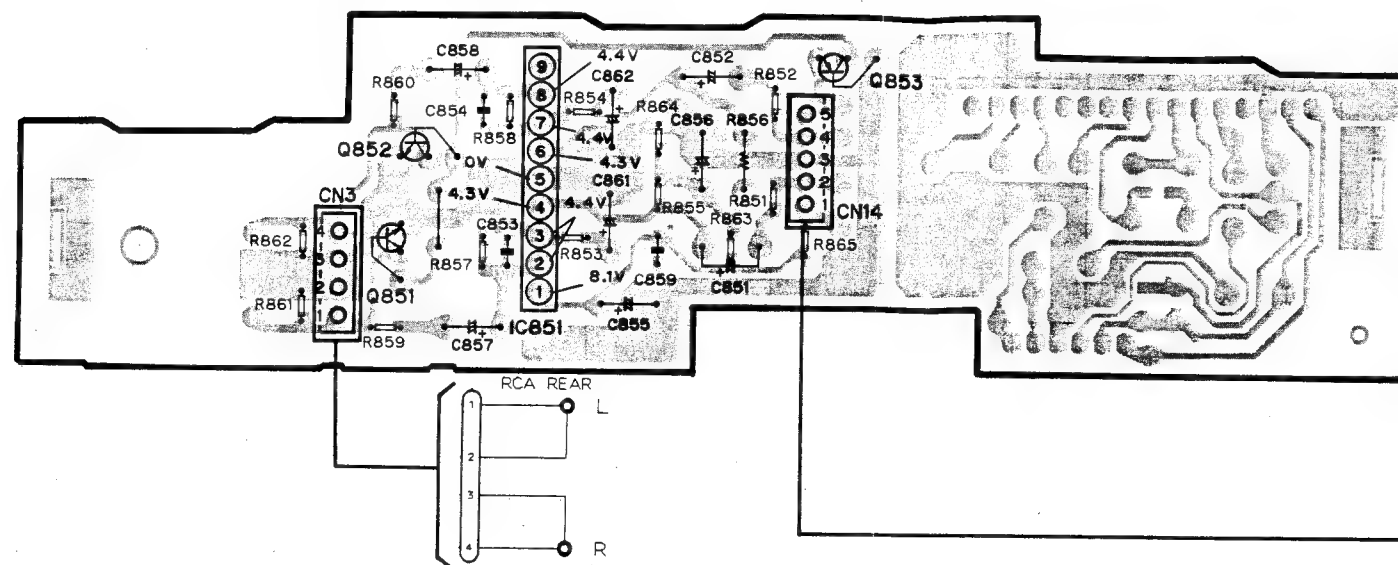
Decimal points for resistor and capacitor fixed values are expressed as:
2.2-2R2
0.022-R022

Fig. 1

16. CONNECTION DIAGRAM (KEH-M4500/UC, X1H)

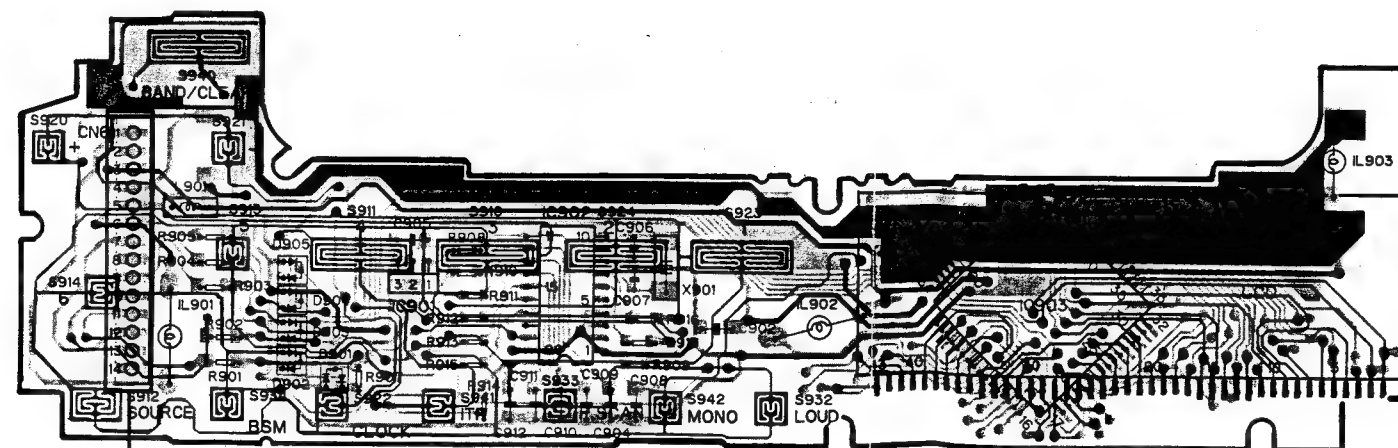
PRE OUT P.C. BOARD

IC. Q Q851 Q852 IC851 Q853



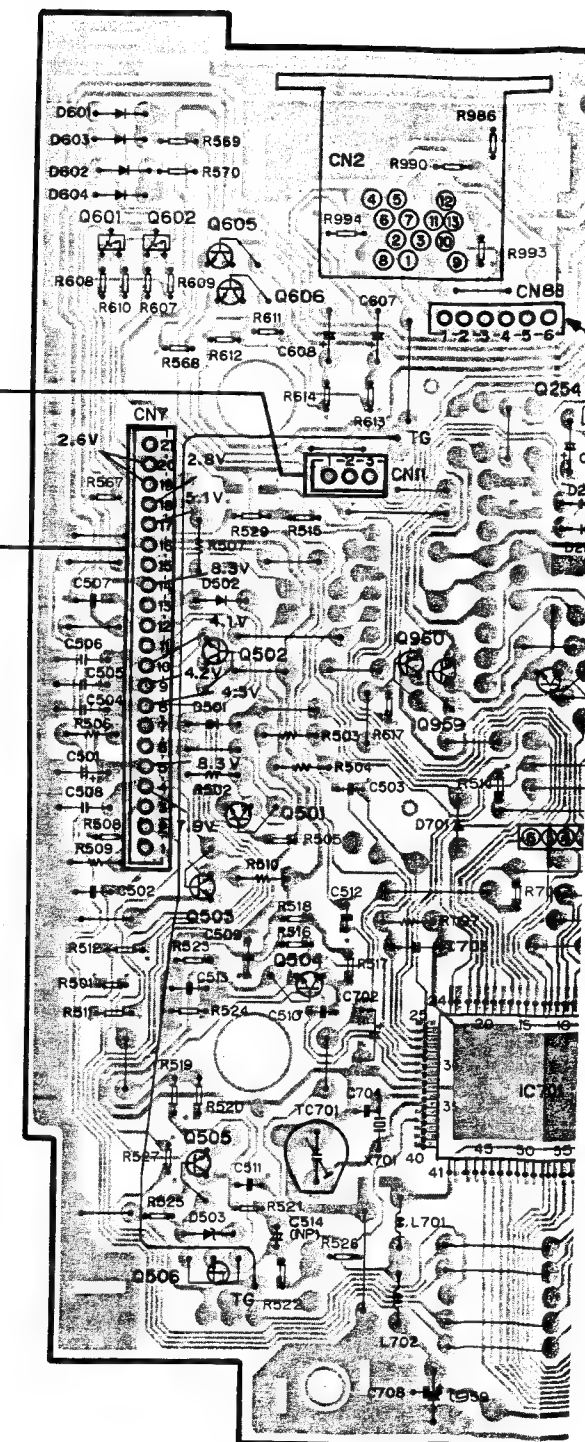
KEY BOARD UNIT

IC IC901 IC902 IC903

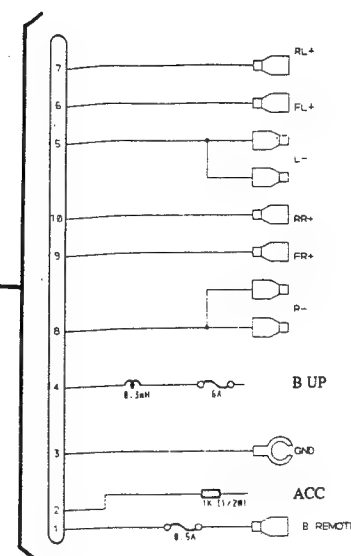
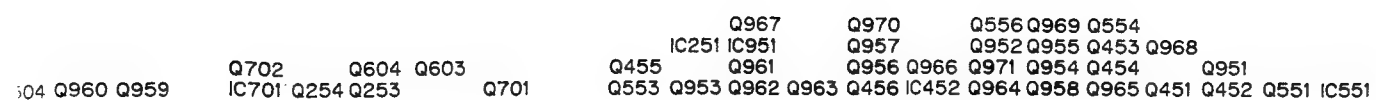


TUNER AMP P.C. BOARD

Q605 Q606
Q502 Q501
Q503 Q506
IC. Q Q601 Q602 Q505 Q504 Q960 Q959 Q70
ADJ. TC701 IC7C

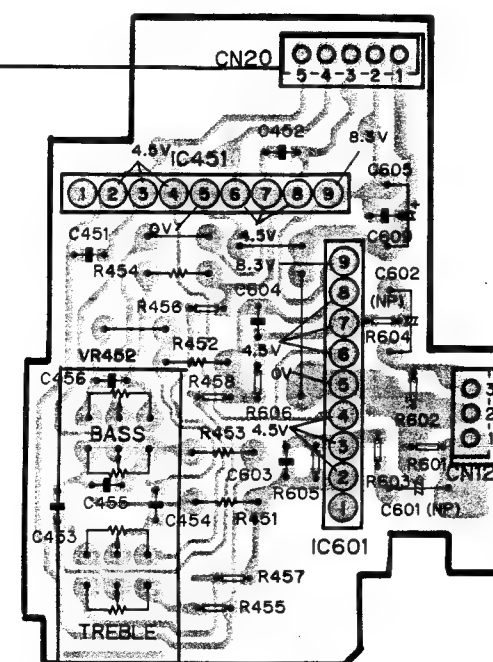


TO FM/AM
TUNER UNIT



TONE CONTROL P.C. BOARD

IC	IC451	IC601
----	-------	-------



TO
▶ CASSETTE MECHANISM
ASSY

Fig. 19

17. CIRCUIT DIAGRAM AND PATTERN

17.1 FM/AM TUNER UNIT (KEH-M5500/UC, KEH-M580/US, KEH-M4500/UC, X1H)

17.2 F

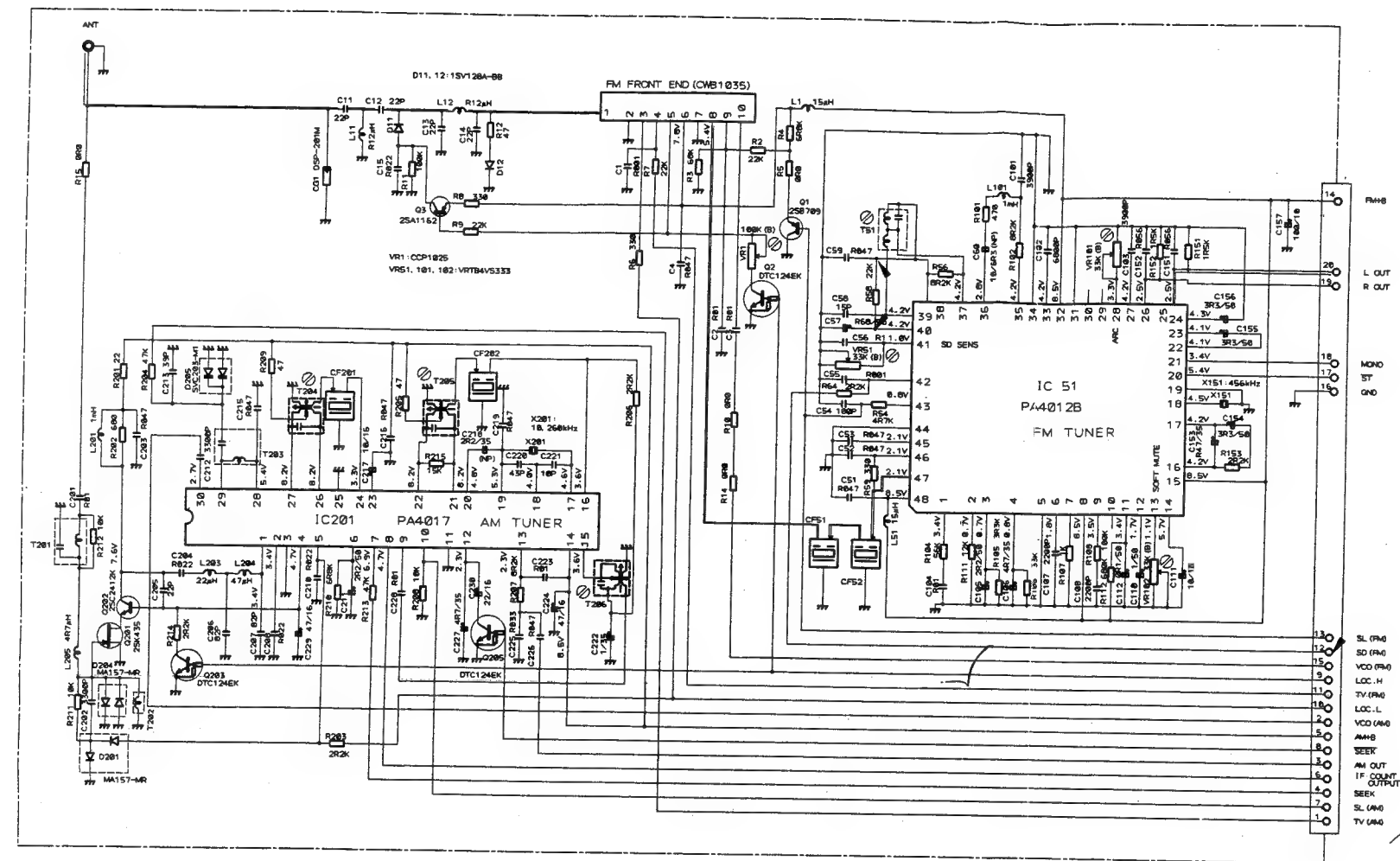


Fig. 20

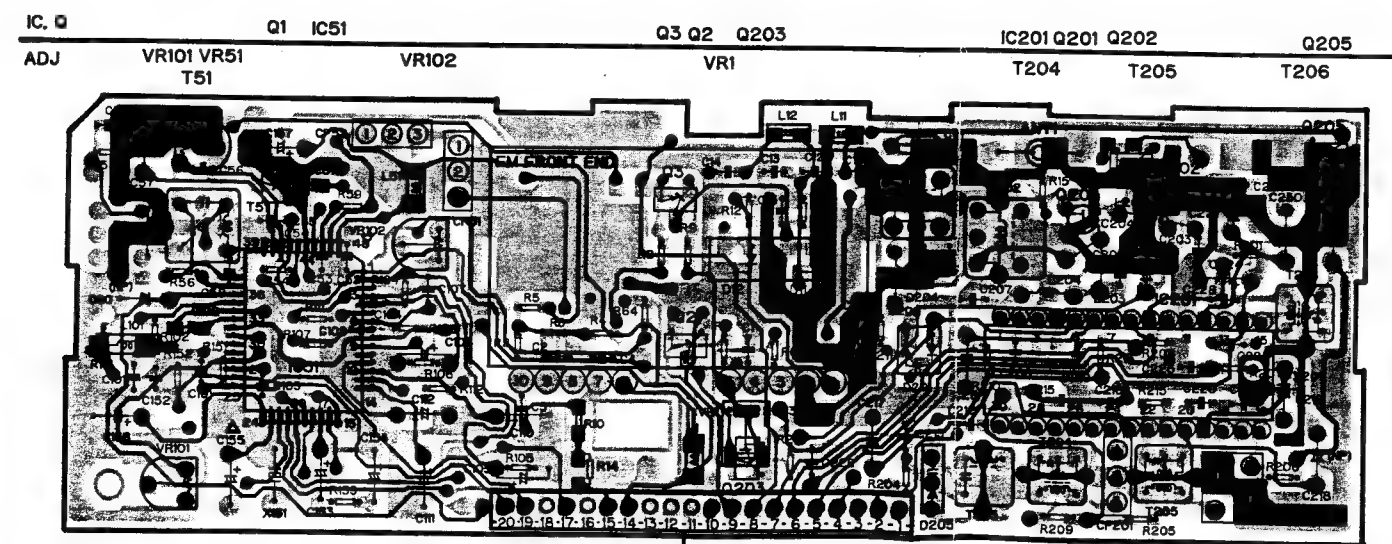


Fig. 21

43

45

17.2 FM/AM TUNER UNIT (KEH-M5550/ES)

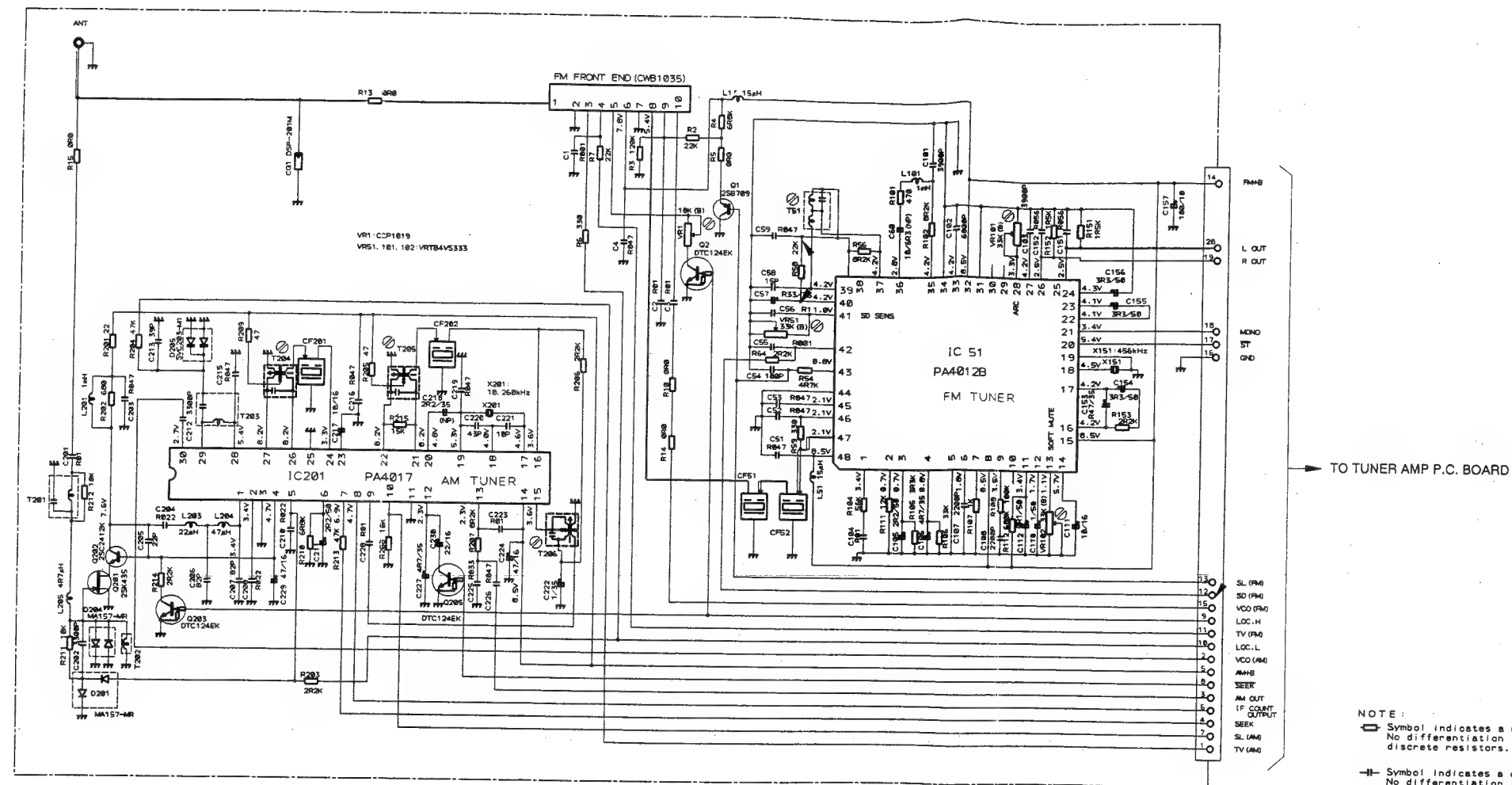


Fig. 22

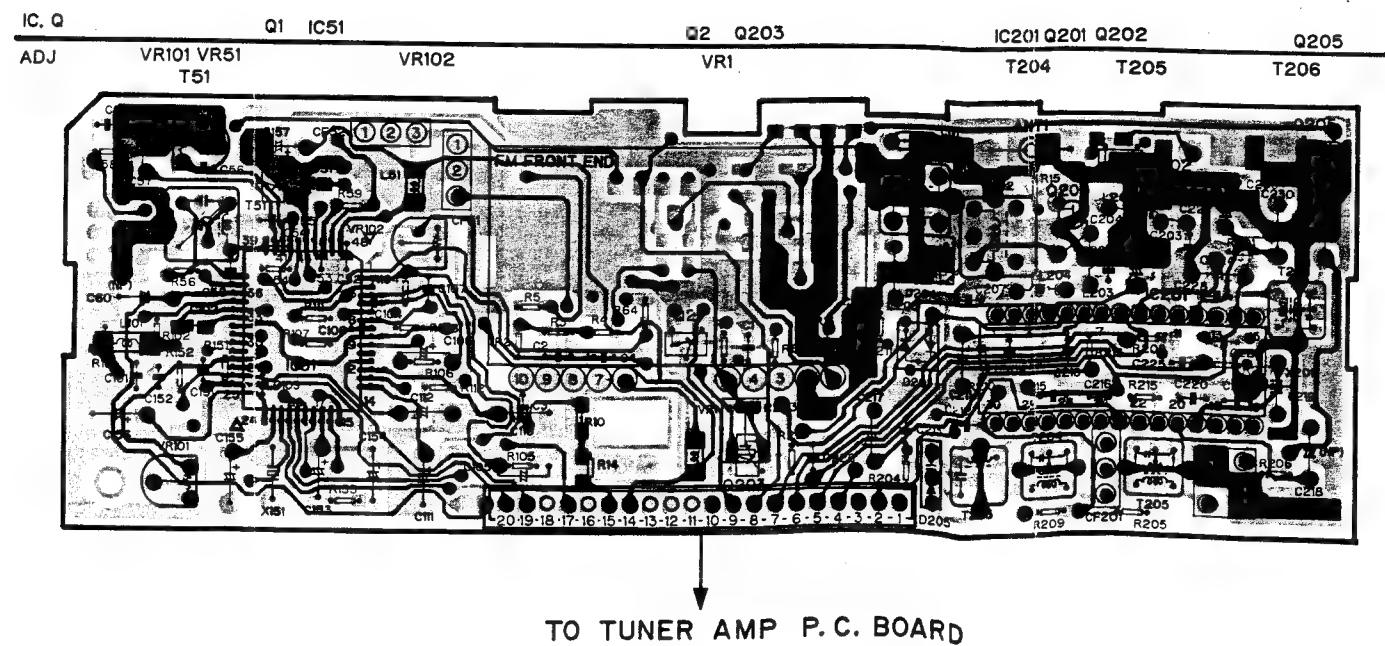


Fig. 23

17.3 CASSETTE MECHANISM ASSY (KEH-M5500/UC, KEH-M5550/ES)

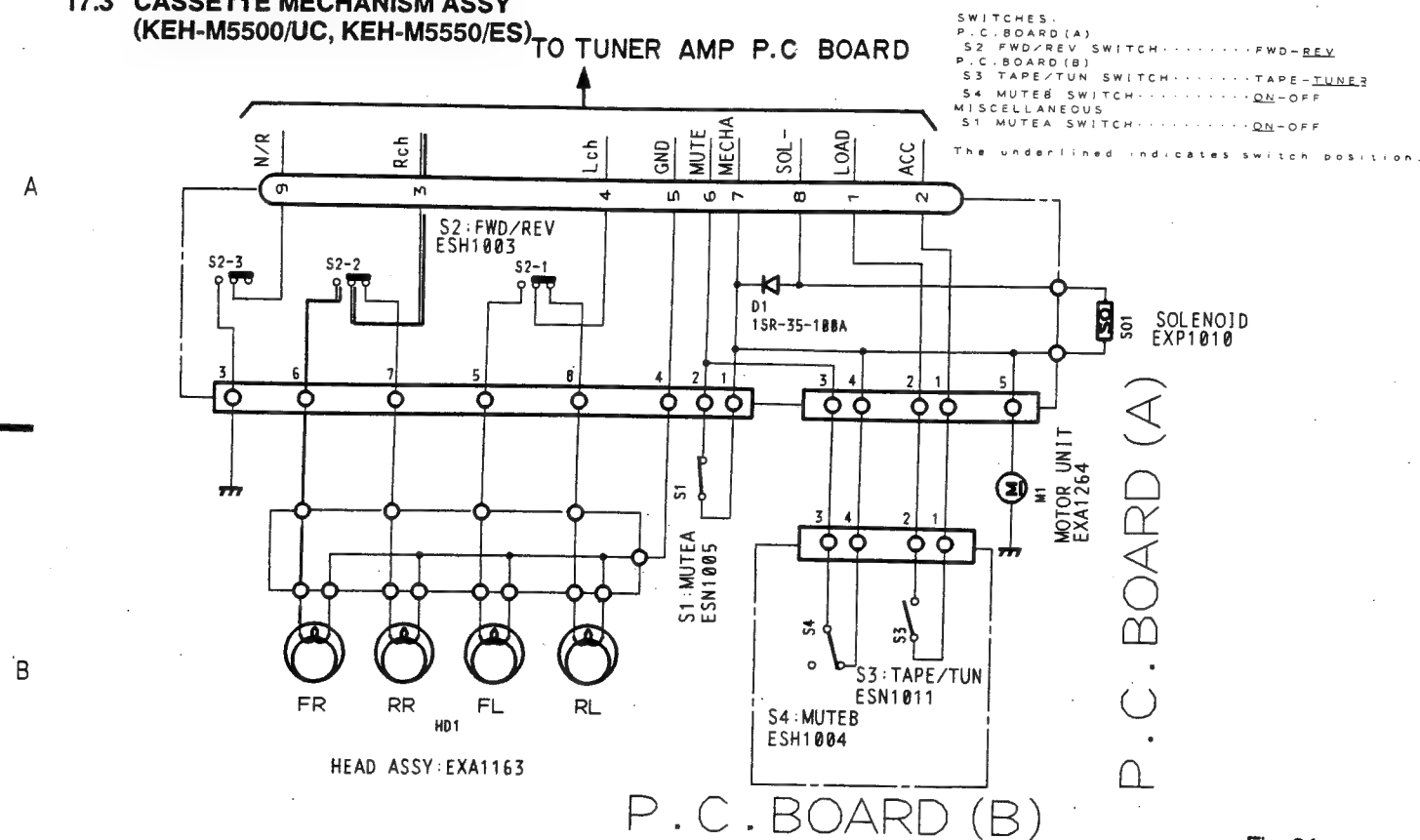


Fig. 24

17.4 CASSETTE MECHANISM ASSY (KEH-M580/US)

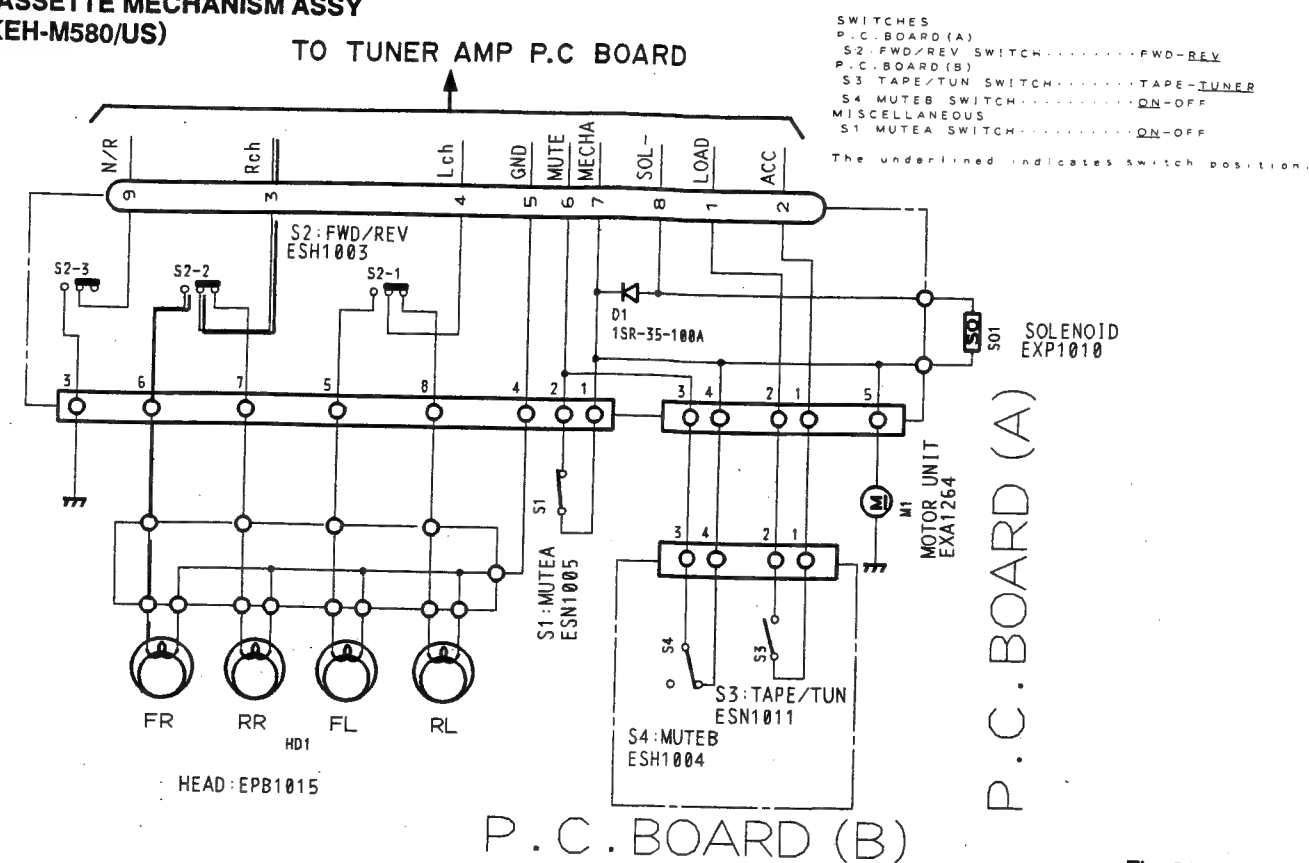


Fig. 26

P.C. BOARD (A)

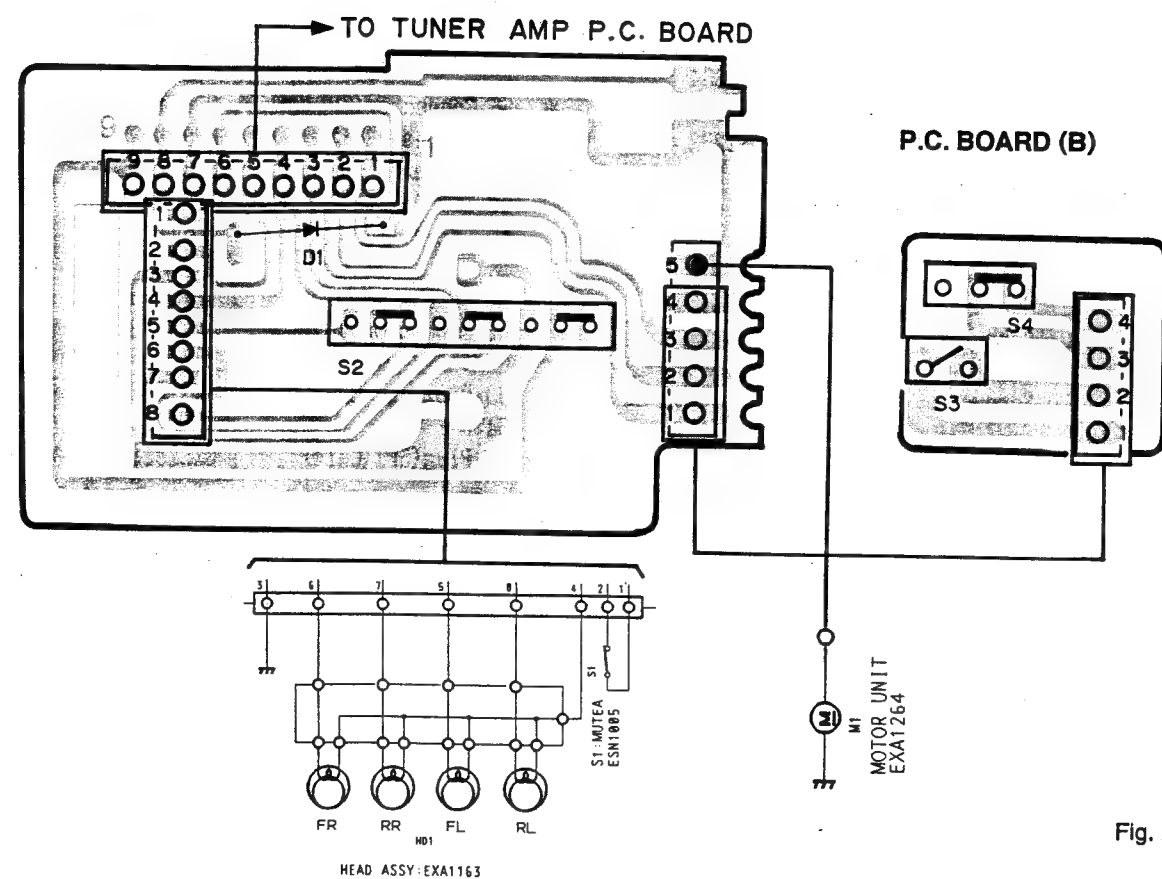


Fig. 25

P.C. BOARD (A)

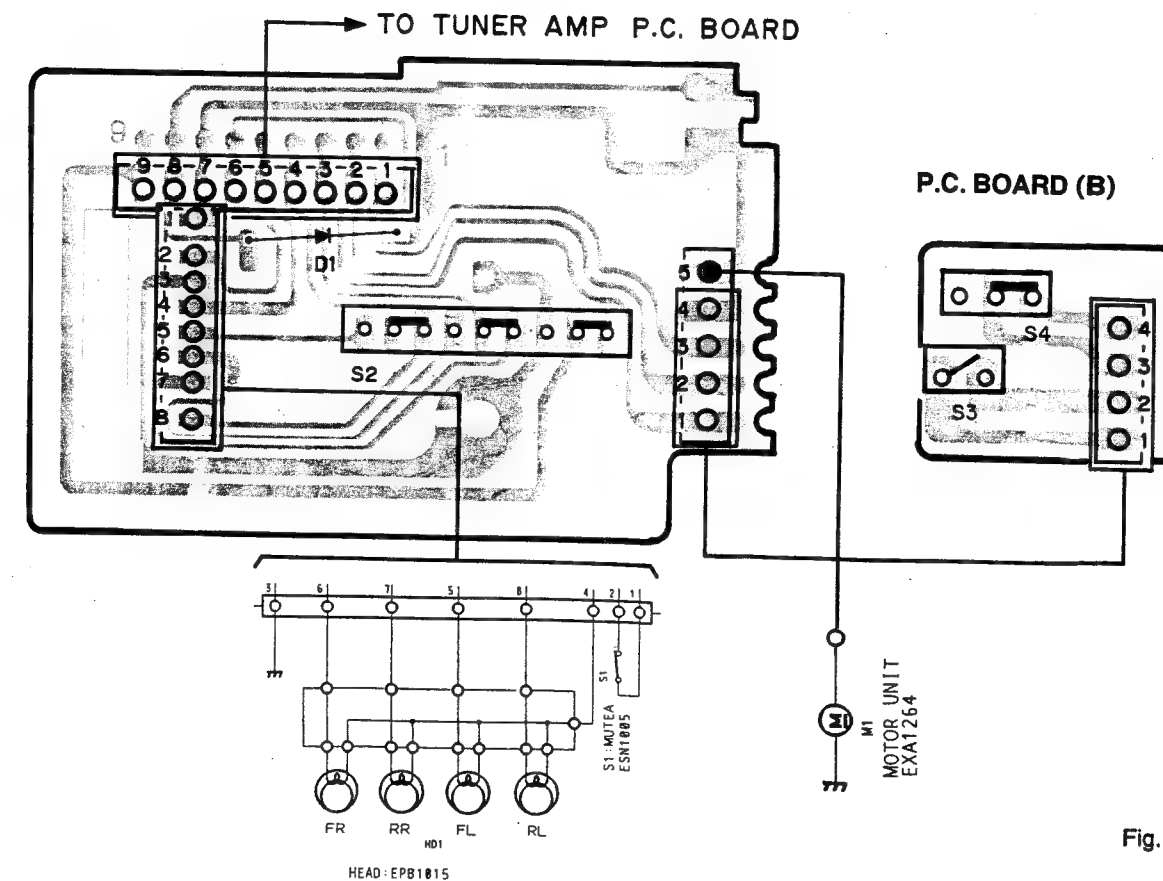


Fig. 27

17.4 CASSETTE MECHANISM ASSY
(KEH-M580/US)

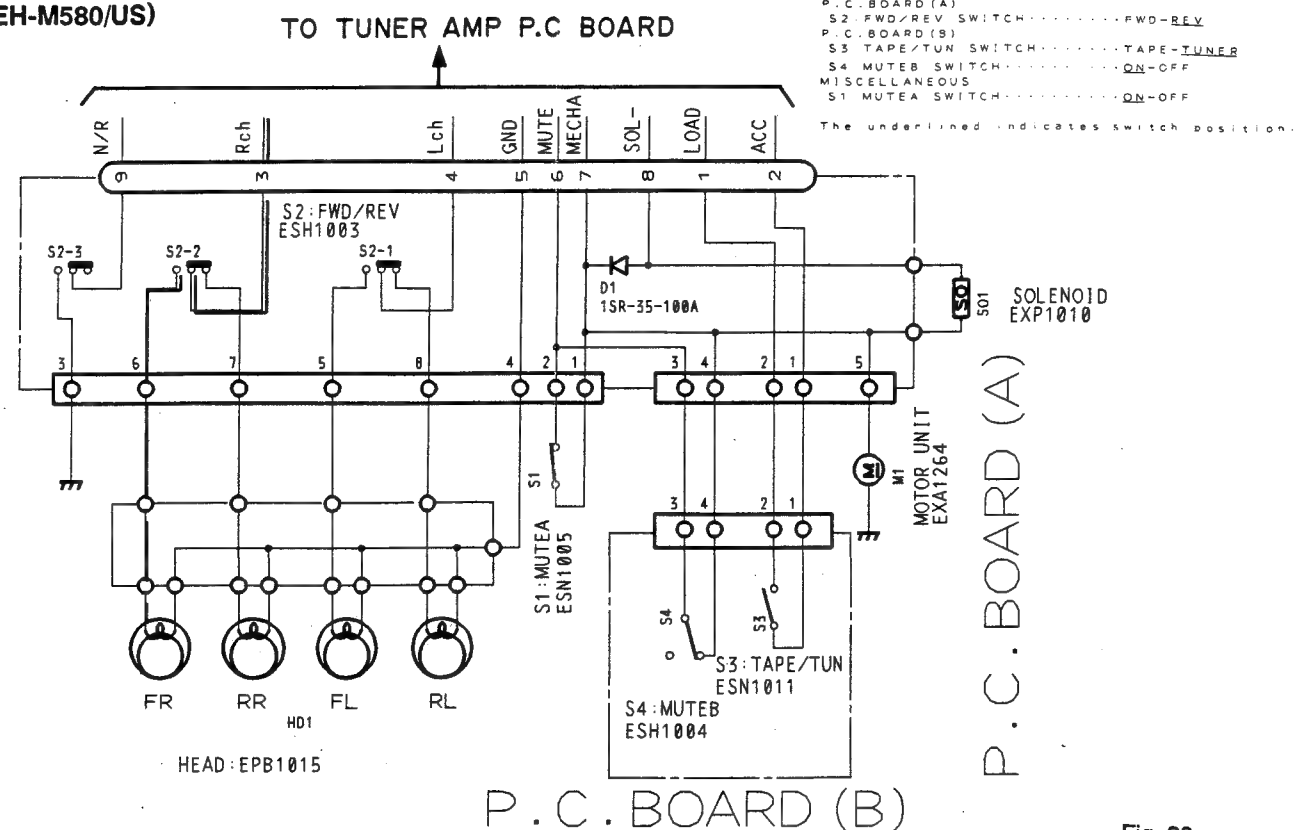


Fig. 26

17.5 CASSETTE MECHANISM ASSY
(KEH-M4500/UC)

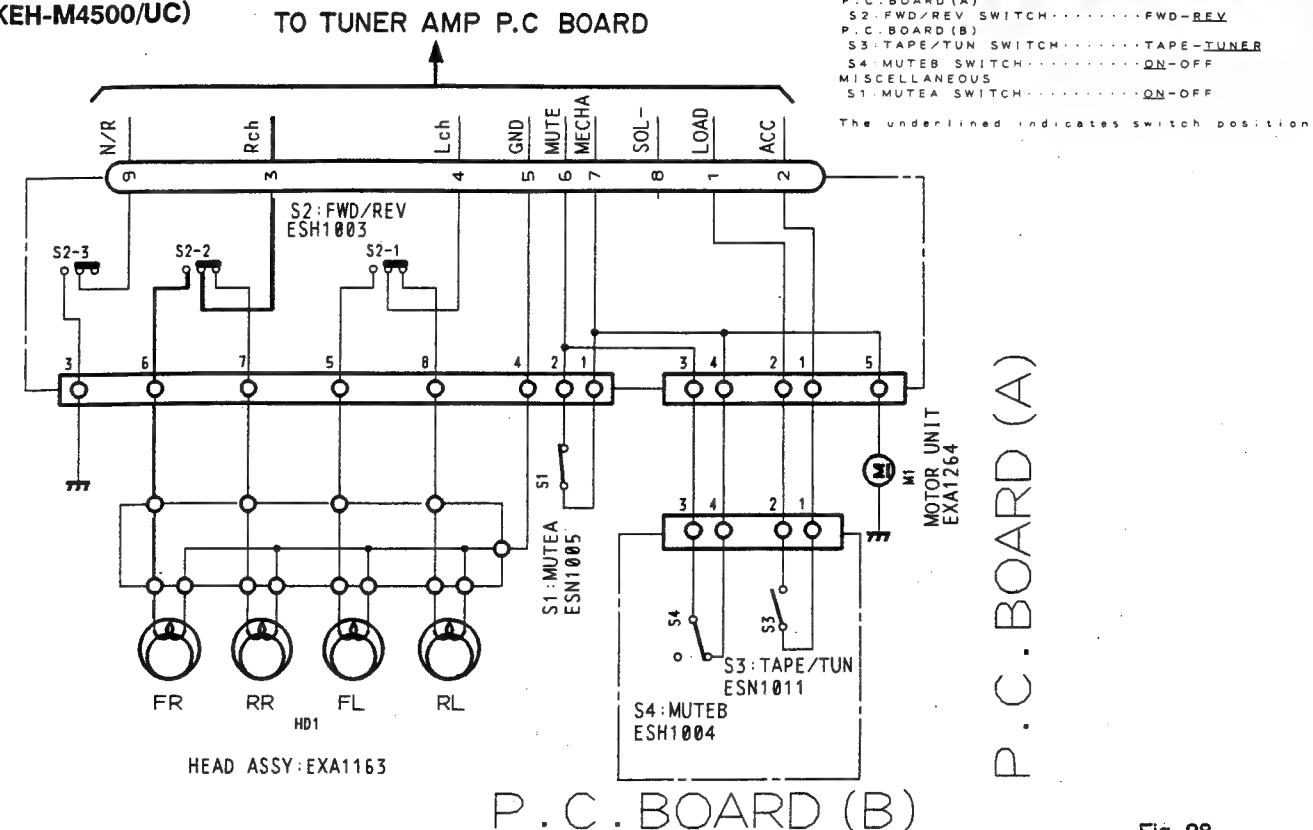


Fig. 28

P.C. BOARD (A)

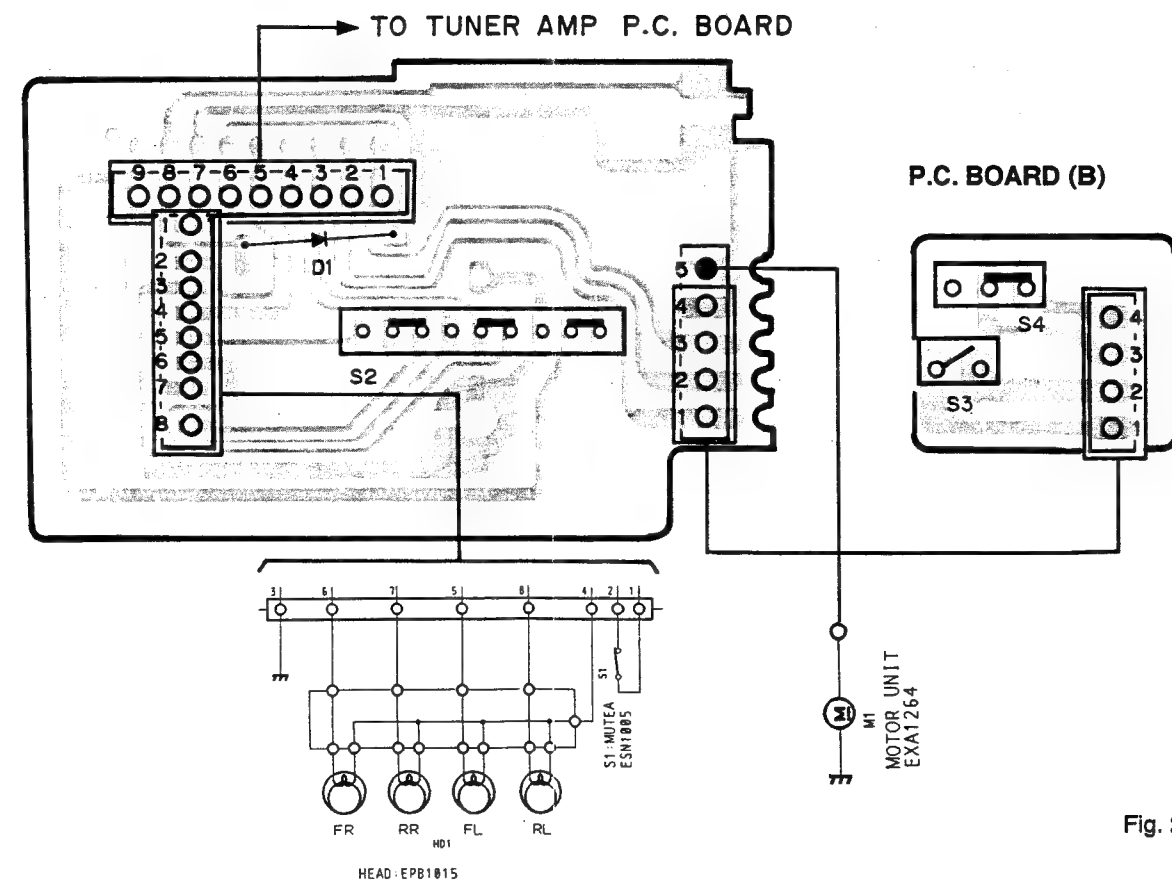


Fig. 27

P.C. BOARD (A)

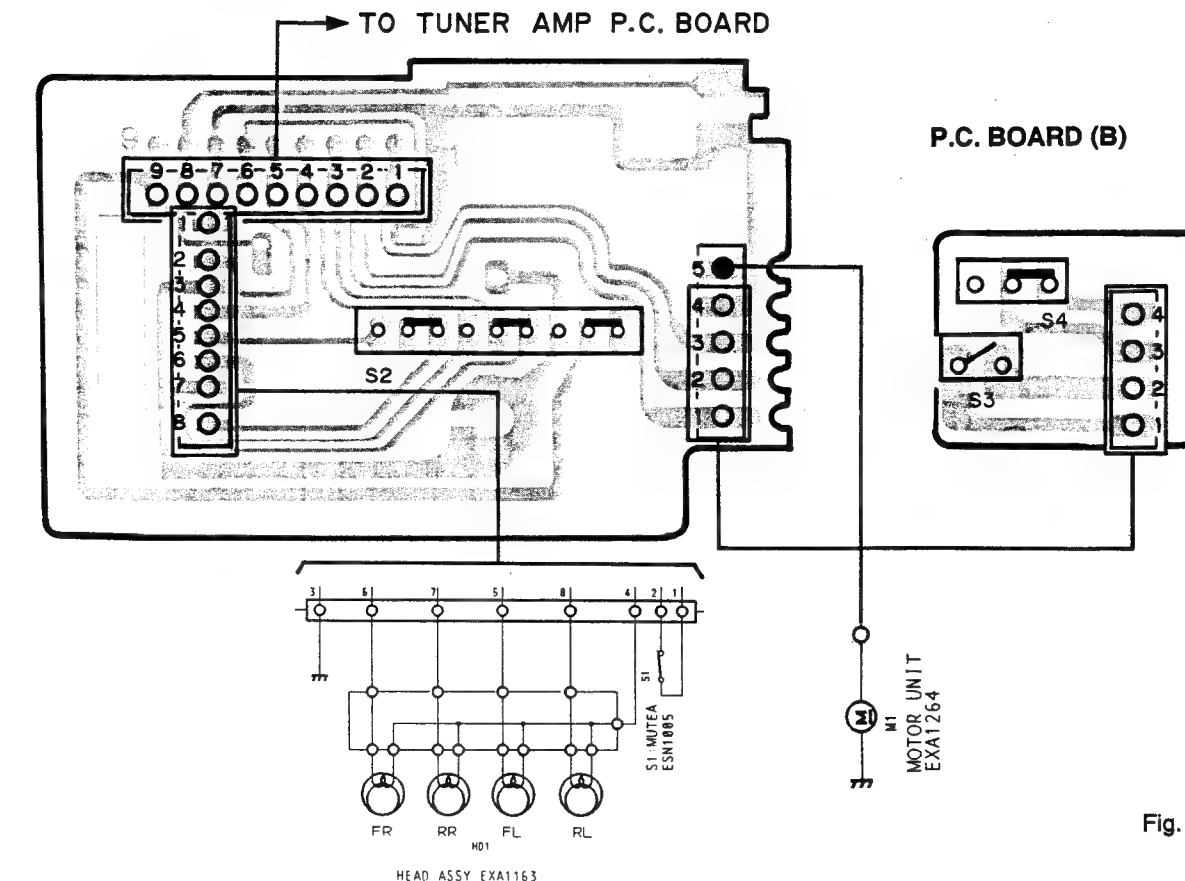
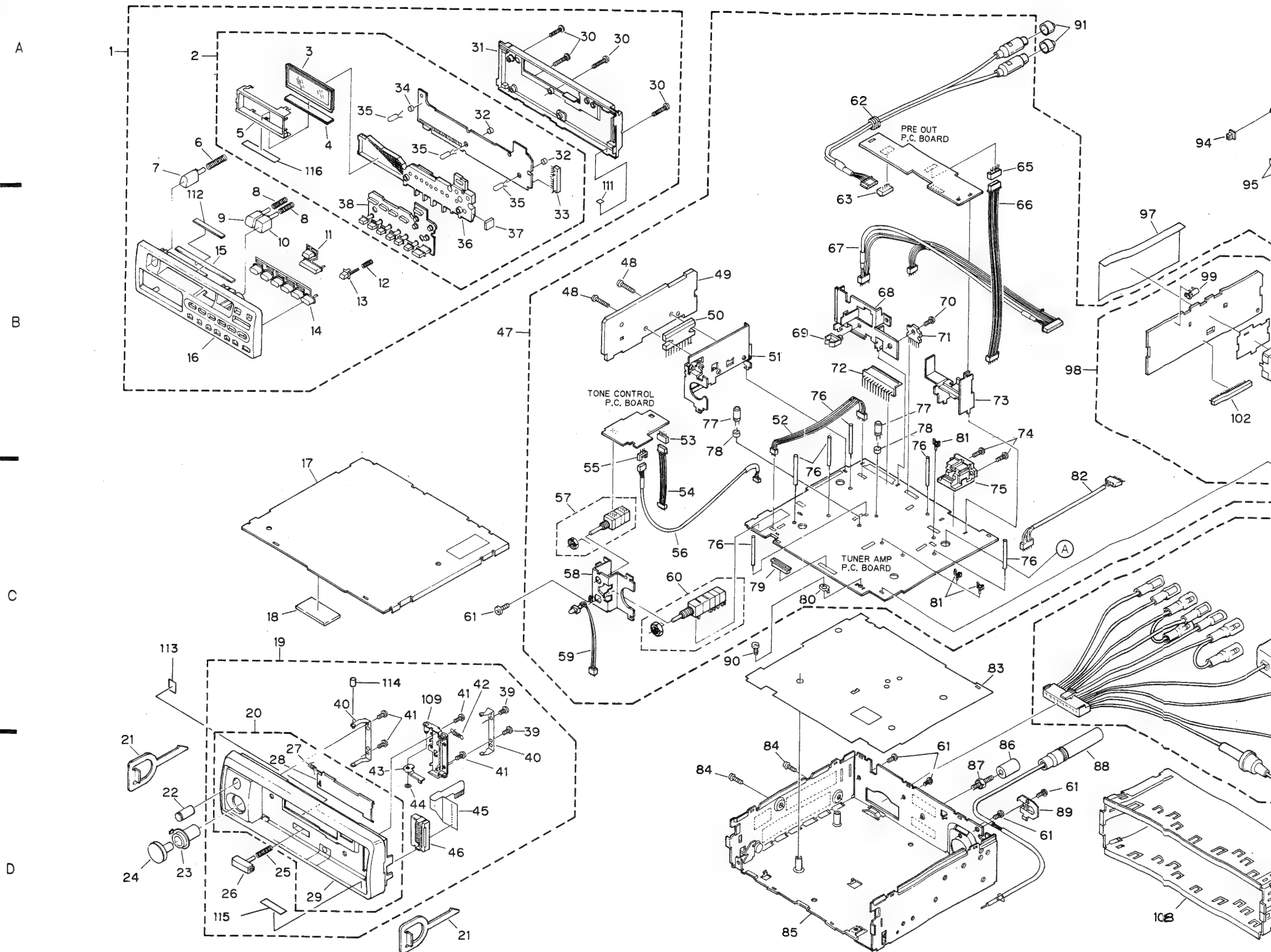


Fig. 29

18. CHASSIS EXPLODED VIEW



●Parts List (KEH-M5500/UC)

NOTES:

- Parts marked by “*” or “*” are generally unavailable because they are not in our Master Spare Parts List.
- Parts marked by “●” are not always kept in stock. Their delivery time may be longer than usual or they may be unavailable.

Mark No.	Description	Part No.	Mark No.	Description	Part No.
	1 Detach Grille Assy	CXA4766	36	Lens	CNV3101
●	2 Key Board Unit	CWM3095	* 37	Cushion	CNM3476
	3 LCD	CAW1168		38 Switch Unit	CXA4740
	4 Connector	CNV3076		39 Screw	BMZ20P025FMC
*	5 Holder	CNC4220		40 Holder Unit	CXA5085
	6 Spring	CBH1455		41 Screw	BPZ20P060FMC
	7 Button(▲)	CAC3218		42 Spring	CBH1395
	8 Spring	CBH1388		43 Arm Unit	CXA4332
	9 Button(◀◀)	CAC3112		44 Washer	CBF1037
	10 Button(▶▶)	CAC3219		45 P. C. Board	CNP2984
	11 Button Unit(●, -, +)	CAC3216		46 Socket	CKS2293
	12 Spring	CBH1446	● 47	Tuner Amp Unit	CWM3080
	13 Button(◀)	CAC3217		48 Screw	BSZ30P140FMC
	14 Button Unit(1-6)	CAC3215	*	49 Heat Sink	CNC3890
	15 Spacer	CNC4296		50 IC(IC551)	TA8215H-A
	16 Grille Unit	CXA4921	*	51 Holder	CNC4223
*	17 Case	CNB1506	*	52 Connector(4P↔5P) (CN17)	CDE3647
*	18 Cushion	CNM3203		53 Plug(5P) (CN20)	CKS1038
	19 Panel Assy	CXA4783	*	54 Connector(5P) (CN19)	CDE3643
	20 Panel Unit	CXA4917	*	55 Plug(3P) (CN12)	CKS1666
	21 Handle	CNC3664		56 Connector(3P) (CN11)	CDE3421
	22 Knob	CAA1305		57 Volume(VR452)	CCS1199
	23 Knob	CAA1233	*	58 Holder	CNC4222
	24 Knob	CAA1234		59 Lamp(IL904) (CN21)	CEL1269
	25 Spring	CBH1440		60 Volume(VR451)	CCS1200
	26 Button	CAC3049		61 Screw	BSZ30P050FMC
	27 Spring	CBH1215		62 Connector(4P↔RCA) (CN103)	CDE3648
	28 Door	CAT1451		63 Plug(4P) (CN3)	CKS1238
*	29 Panel	CNS2495		64	
	30 Screw	BPZ20P100FZK	*	65 Plug(5P) (CN14)	CKS1038
	31 Cover	CNS2422		66 Connector(5P) (CN13)	CDE3644
	32 Spacer	CNW-662		67 Connector(4P, 5P↔9P) (CN15) (CN16)	CDE3658
	33 Plug(13P) (CN6)	CKS2292		68 Holder	CNC4224
	34 Bush	CNW-855	*	69 Clamper	CNV1343
	35 Lamp(IL901, 902, 903)	CEL1249		70 Screw	BSZ30P080FMC

Mark No.	Description	Part No.	Mark No.	Description	Part No.
	71 IC(IC951)	TA8214K	*	96 Insulator	CNM3467
	72 Plug(10P) (CN1)	CKS-467	*	97 Insulator	CNM3487
*	73 Holder	CNC4225	●	98 FM/AM Tuner Unit	CWE1225
	74 Screw	BMZ26P050FMC		99 Antenna Jack (A1)	CKX1010
	75 Connector(13P) (CN2)	CKS1832	*	100 Insulator	CNM2105
*	76 Clamper	CEF1006		101 FM Front End	CWB1035
	77 Capacitor(C253, 254)	CCH1145	*	102 Plug(20P) (CN7)	CKS1628
	78 Spacer	CNW-662	*	103 Holder	CNC2880
	79 Connector(12P) (CN4)	CKS1260		104 Cord Assy	CDE3111
*	80 Holder	CNC2218		105 Resistor	RS1/2P102JL
	81 Clamper	CNV1335		106 Cap	CNS1472
*	82 Connector(6P) (CN8)	CDE3602		107	
*	83 Insulator	CNM3322	*	108 Holder	CNC3342
	84 Screw	BSZ30P100FMC		109 Holder Unit	CXA4687
*	85 Chassis Unit	CXA4821		110	
	86 Bush	CNV1009	*	111 Cushion	CNM3214
	87 Screw	CBA1002	*	112 Spacer	CNM3522
	88 Antenna Cable	CDH1128		113 Spacer	CNM3521
*	89 Holder	CNC2913		114 Cushion	CNM3366
	90 Screw	BSZ30P055FUC		115 Spacer	CNM3529
	91 Cap	CNW-829	*	116 Insulator	CNM3527
	92 Screw	BMZ26P050FMC			
●	93 Cassette Mechanism Assy	EXK1786			
	94 Button	CAC2819			
	95 Button	CAC2820			

- The KEH-M580/US, KEH-M4500/UC, KEH-M4500/X1H and KEH-M5550/ES Parts Lists enumerate the parts which differ from those enumerated in the KEH-M5500/UC Parts List only.
The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly.
The KEH-M5500/UC Parts List is given on page 52.

			KEH-M5500/UC	KEH-M580/US	KEH-M4500/UC	KEH-M4500/X1H	KEH-M5550/ES
Mark	No.	Description	Part No.	Part No.	Part No.	Part No.	Part No.
	1	Detach Grille Assy	CXA4766	CXA4765	CXA4778	CXA4778	CXA4767
	16	Grille Unit	CXA4921	CXA4920	CXA4929	CXA4929	CXA4922
	19	Panel Assy	CXA4783	CXA4783	CXA4783	CXA4783	CXA4782
	20	Panel Unit	CXA4917	CXA4917	CXA4917	CXA4917	CXA4812
*	29	Panel	CNS2495	CNS2495	CNS2495	CNS2495	CNS2424
●	47	Tuner Amp Unit	CWM3080	CWM3079	CWM3092	CWM3092	CWM3081
	62	Connector	CDE3648	CDE3650	CDE3648	CDE3648	CDE3648
	67	Connector	CDE3658	CDE3658	CDE3725	CDE3725	CDE3658
	91	Cap	CNW-829	CNV2680	CNW-829	CNW-829	CNW-829
●	93	Cassette Mechanism Assy	EXK1786	EXK1796	EXK1776	EXK1776	EXK1786
●	98	FM/AM Tuner Unit	CWE1225	CWE1225	CWE1225	CWE1225	CWE1226
*	116	Insulator	CNM3527	CNM3527	CNM3527	.....	CNM3527

19. CASSETTE MECHANISM ASSY EXPLODED VIEW

● Parts List (KEH-M5500/UC, KEH-M5550/ES)

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Reel Unit	EXA1251	41	Screw (M1.7×5.5)	CBA1025
2	Gear Unit	EXA1206	42	Gear	ENV1205
3	Gear	ENV1203	43	Arm	ENV1206
4	Gear	ENV1204	44	Spring	EBH1317
5	Gear	ENV1273	45	Chassis Unit	EXA1267
6	Gear	ENV1211	46	Screw	JFZ20P025FNI
7	Screw	BMZ20P025FMC	47	Gear	ENV1267
8	Sub Chassis Unit	EXA1261	48	Gear	ENV1209
9	Arm	ENV1210	49	Arm Unit	EXA1155
10	Spring	EBH1381	50	Washer	YE30FUC
11	Washer	YE25FUC	51	Spring	EBH1310
12	Shaft	ELA1266	52	Flywheel Unit	EXA1257
13	Lever	ENC1275	53	Belt	ENT1018
14	Spring	EBH1361	54	Screw (M2×5)	EBA1028
15	Washer	EBF1015	55	Head Assy (HD1)	EXA1163
16	Gear	ENV1208	56	P. C. Board	ENP1042
17	Washer	CBF1037	57	Switch (S1) (MuteA)	ESN1005
18	Spring	EBH1362	58	Screw (M1.7×3)	CBA1038
19	Lever	ENC1302	59	Washer	YE20FUC
20	Spring	EBH1359	60	Pinch Roller Unit	EXA1194
21	Spring	EBH1358	61	Washer	YE12FUC
22	Lever	ENC1256	62	Roller	ELA1250
23	Spring	EBH1373	63	Arm Unit	EXA1166
24	Arm	ENC1248	64	Arm	ENV1227
25	Spring	EBH1308	65	Pinch Roller Unit	EXA1193
26	Arm Unit	EXA1198	66	Arm	ENC1266
27	Spring	EBH1364	67	Spring	EBH1368
28	Arm	ENC1263	68	Cord	EDD1008
29	Spring	EBH1374	69	Plug (9P)	CKS1056
30	Frame	ENC1204	70	Gathering P. C. Board	ENX1016
31	Lever	ENV1287	71	Washer	WH23FMC
32	Holder	ENC1257	72	Screw	BSZ23P050FMC
33	Head Base Unit	EXA1258	73	Switch (S2) (FWD/REV)	ESH1003
34	Spring	EBH1363	74	Spring	EBH1322
35	Motor Unit (M1)	EXA1264	75	Washer	YE15FUC
36	Screw	PMS26P025FUC	76	Lever	ENC1246
37	Screw (M2×5)	CBA1054	77	Spring	EBH1365
38	Gathering P. C. Board	ENX1017	78	Lever	ENC1247
39	Switch (S4) (MuteB)	ESH1004	79	Bracket	ENC1250
40	Switch (S3) (Tape/Tun)	ESN1011	80	Solenoid (S01)	EXP1010

Mark No.	Description	Part No.
81	Screw (M2×6)	EBA1023
82	Arm Unit	EXA1158
83	Spring	EBH1375
84	Arm Unit	EXA1157
85	Spring	EBH1345
86	Pulley	ENV1291

A

B

C

D

● KEH-M5500/UC, KEH-M5550/ES

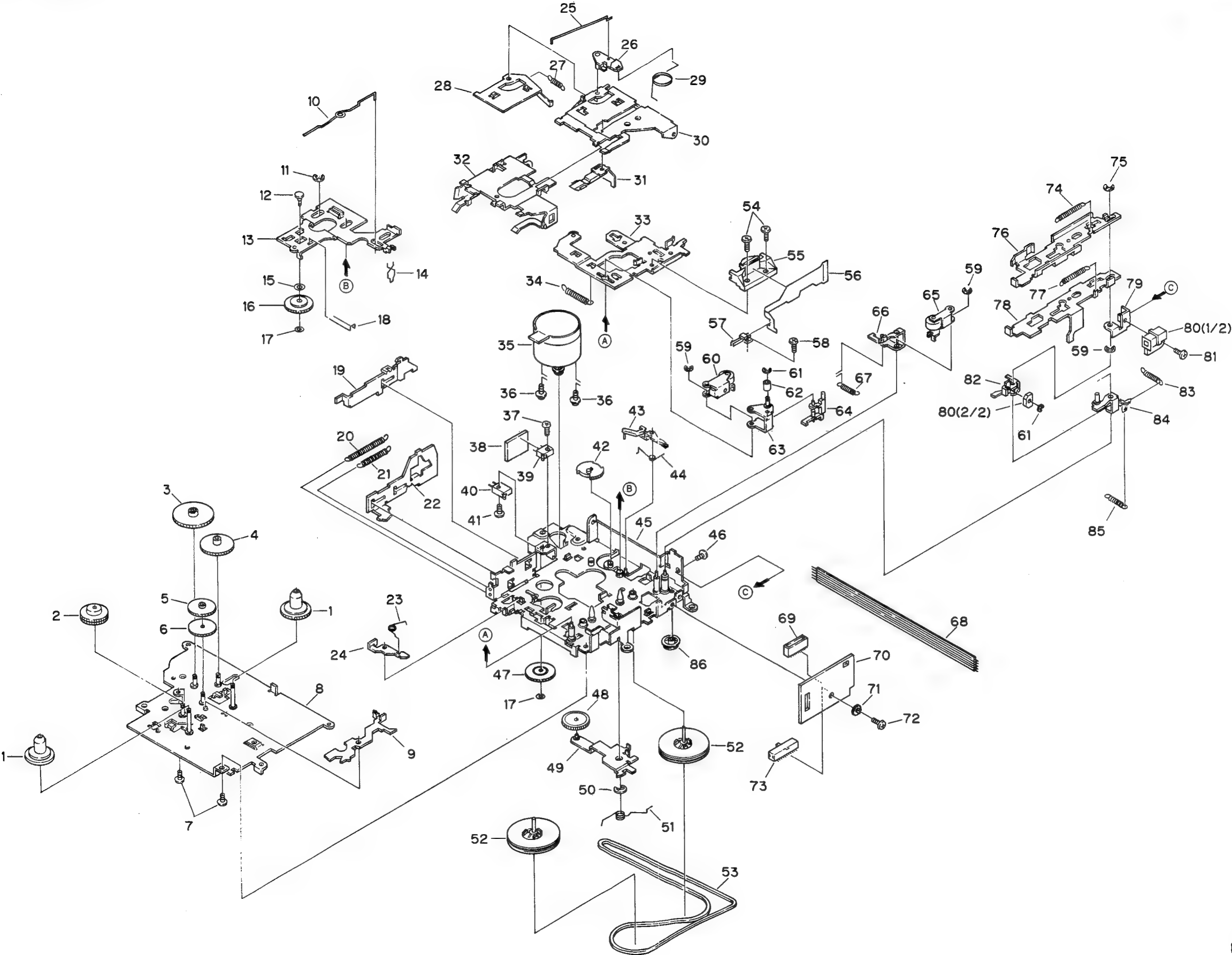


Fig. 31

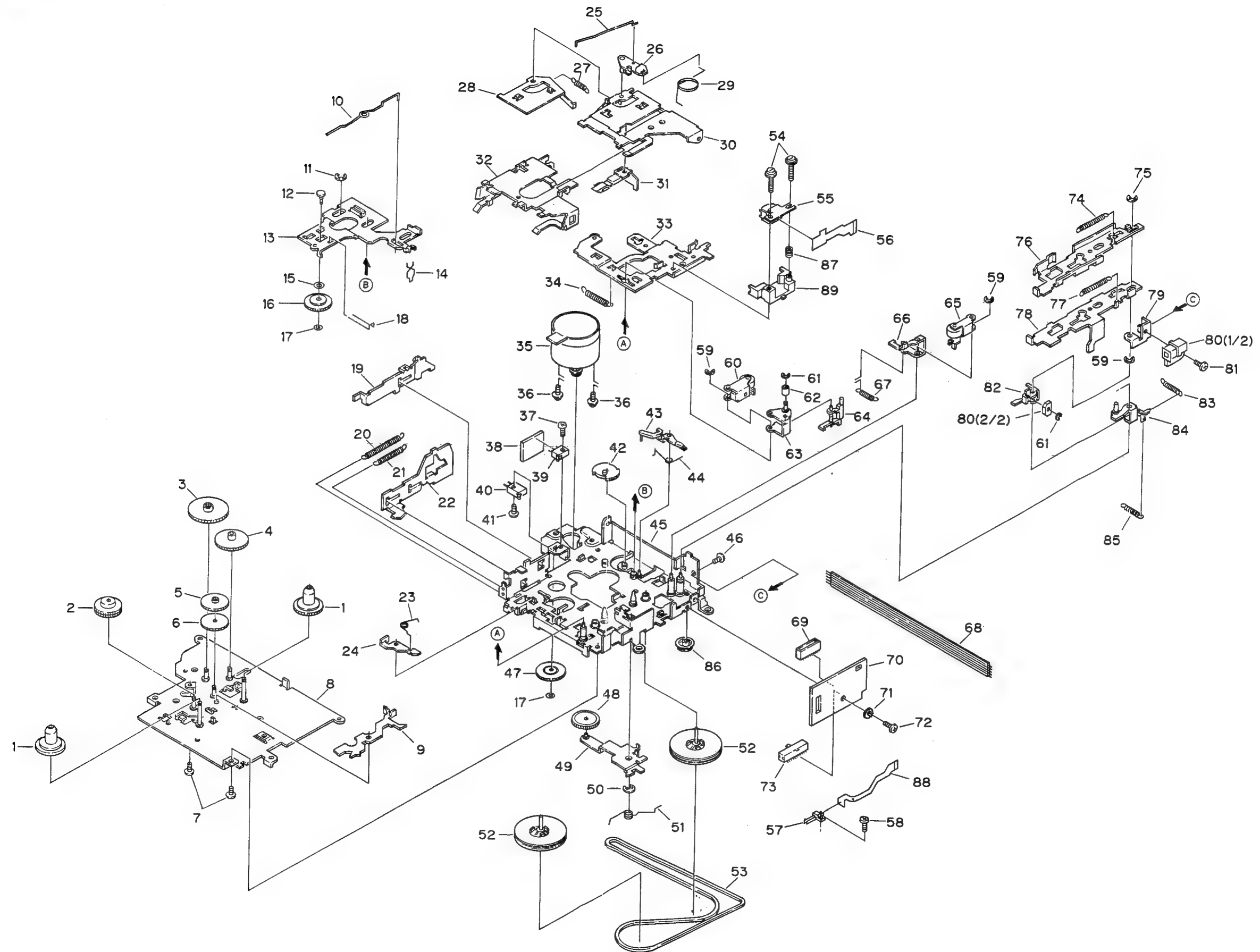


Fig. 32

● Parts List (KEH-M580/US)

Mark No.	Description	Part No.	Mark No.	Description	Part No.
A	1 Reel Unit	EXA1251	41 Screw (M1.7×5.5)	CBA1025	
	2 Gear Unit	EXA1206	42 Gear	ENV1205	
	3 Gear	ENV1203	43 Arm	ENV1206	
	4 Gear	ENV1204	44 Spring	EBH1317	
	5 Gear	ENV1273	45 Chassis Unit	EXA1267	
	6 Gear	ENV1211	46 Screw	JFZ20P025FNI	
	7 Screw	BMZ20P025FMC	47 Gear	ENV1267	
	8 Sub Chassis Unit	EXA1261	48 Gear	ENV1209	
	9 Arm	ENV1210	49 Arm Unit	EXA1155	
	10 Spring	EBH1381	50 Washer	YE30FUC	
B	11 Washer	YE25FUC	51 Spring	EBH1310	
	12 Shaft	ELA1266	52 Flywheel Unit	EXA1257	
	13 Lever	ENC1275	53 Belt	ENT1018	
	14 Spring	EBH1361	54 Screw (M2×12)	EBA1024	
	15 Washer	EBF1015	55 Head (HD1)	EPB1015	
	16 Gear	ENV1208	56 P.C. Board	ENP1043	
	17 Washer	CBF1037	57 Switch (S1) (MuteA)	ESN1005	
	18 Spring	EBH1362	58 Screw (M1.7×3)	CBA1038	
	19 Lever	ENC1302	59 Washer	YE20FUC	
	20 Spring	EBH1359	60 Pinch Roller Unit	EXA1194	
C	21 Spring	EBH1358	61 Washer	YE12FUC	
	22 Lever	ENC1256	62 Roller	ELA1250	
	23 Spring	EBH1373	63 Arm Unit	EXA1166	
	24 Arm	ENC1248	64 Arm	ENV1227	
	25 Spring	EBH1308	65 Pinch Roller Unit	EXA1193	
	26 Arm Unit	EXA1198	66 Arm	ENC1266	
	27 Spring	EBH1364	67 Spring	EBH1368	
	28 Arm	ENC1263	68 Cord	EDD1008	
	29 Spring	EBH1374	69 Plug (9P)	CKS1056	
	30 Frame	ENC1204	70 Gathering P.C. Board	ENX1016	
D	31 Lever	ENV1287	71 Washer	WH23FMC	
	32 Holder	ENC1257	72 Screw	BSZ23P050FMC	
	33 Head Base Unit	EXA1203	73 Switch (S2) (FWD/REV)	ESH1003	
	34 Spring	EBH1363	74 Spring	EBH1322	
	35 Motor Unit (M1)	EXA1264	75 Washer	YE15FUC	
	36 Screw	PMS26P025FUC	76 Lever	ENC1246	
	37 Screw (M2×5)	CBA1054	77 Spring	EBH1365	
	38 Gathering P.C. Board	ENX1017	78 Lever	ENC1247	
	39 Switch (S4) (MuteB)	ESH1004	79 Bracket	ENC1250	
	40 Switch (S3) (Tape/Tun)	ESN1011	80 Solenoid (S01)	EXP1010	

Mark No.	Description	Part No.
81	Screw (M2×6)	EBA1023
82	Arm Unit	EXA1158
83	Spring	EBH1375
84	Arm Unit	EXA1157
85	Spring	EBH1345
86	Pulley	ENV1291
87	Spring	EBH1065
88	P.C. Board	ENP1044
89	Guide	ENV1270

● Parts List (KEH-M4500/UC, X1H)

Mark No.	Description	Part No.	Mark No.	Description	Part No.
1	Reel Unit	EXA1251	41	Screw (M1.7×5.5)	CBA1025
2	Gear Unit	EXA1206	42	Gear	ENV1205
3	Gear	ENV1203	43	Arm	ENV1206
4	Gear	ENV1204	44	Spring	EBH1317
5	Gear	ENV1273	45	Chassis Unit	EXA1267
6	Gear	ENV1211	46	.....
7	Screw	BMZ20P025FMC	47	Gear	ENV1267
8	Sub Chassis Unit	EXA1261	48	Gear	ENV1209
9	Arm	ENV1210	49	Arm Unit	EXA1155
10	Spring	EBH1381	50	Washer	YE30FUC
11	Washer	YE25FUC	51	Spring	EBH1310
12	Shaft	ELA1266	52	Flywheel Unit	EXA1257
13	Lever	ENC1275	53	Belt	ENT1018
14	Spring	EBH1361	54	Screw (M2×5)	EBA1028
15	Washer	EBF1015	55	Head Assy (HD1)	EXA1163
16	Gear	ENV1208	56	P. C. Board	ENP1042
17	Washer	CBF1037	57	Switch (S1) (MuteA)	ESN1005
18	Spring	EBH1362	58	Screw (M1.7×3)	CBA1038
19	Lever	ENC1302	59	Washer	YE20FUC
20	Spring	EBH1359	60	Pinch Roller Unit	EXA1194
21	Spring	EBH1358	61, 62	.....
22	Lever	ENC1256	63	Arm	ENC1213
23	Spring	EBH1373	64	Arm	ENV1227
24	Arm	ENC1248	65	Pinch Roller Unit	EXA1193
25	Spring	EBH1308	66	Arm	ENC1266
26	Arm Unit	EXA1198	67	Spring	EBH1368
27	Spring	EBH1364	68	Cord	EDD1008
28	Arm	ENC1263	69	Plug (9P)	CKS1056
29	Spring	EBH1374	70	Gathering P. C. Board	ENX1016
30	Frame	ENC1204	71	Washer	WH23FMC
31	Lever	ENV1287	72	Screw	BSZ23P050FMC
32	Holder	ENC1257	73	Switch (S2) (FWD/REV)	ESH1003
33	Head Base Unit	EXA1258	74	Spring	EBH1365
34	Spring	EBH1363	75	Washer	YE15FUC
35	Motor Unit (M1)	EXA1264	76	Lever	ENC1244
36	Screw	PMS26P025FUC	77	Spring	EBH1365
37	Screw (M2×5)	CBA1054	78	Lever	ENC1245
38	Gathering P. C. Board	ENX1017	79-83	.....
39	Switch (S4) (MuteB)	ESH1004	84	Arm	ENC1272
40	Switch (S3) (Tape/Tun)	ESN1011	85	Spring	EBH1367
			86	Pulley	ENV1291

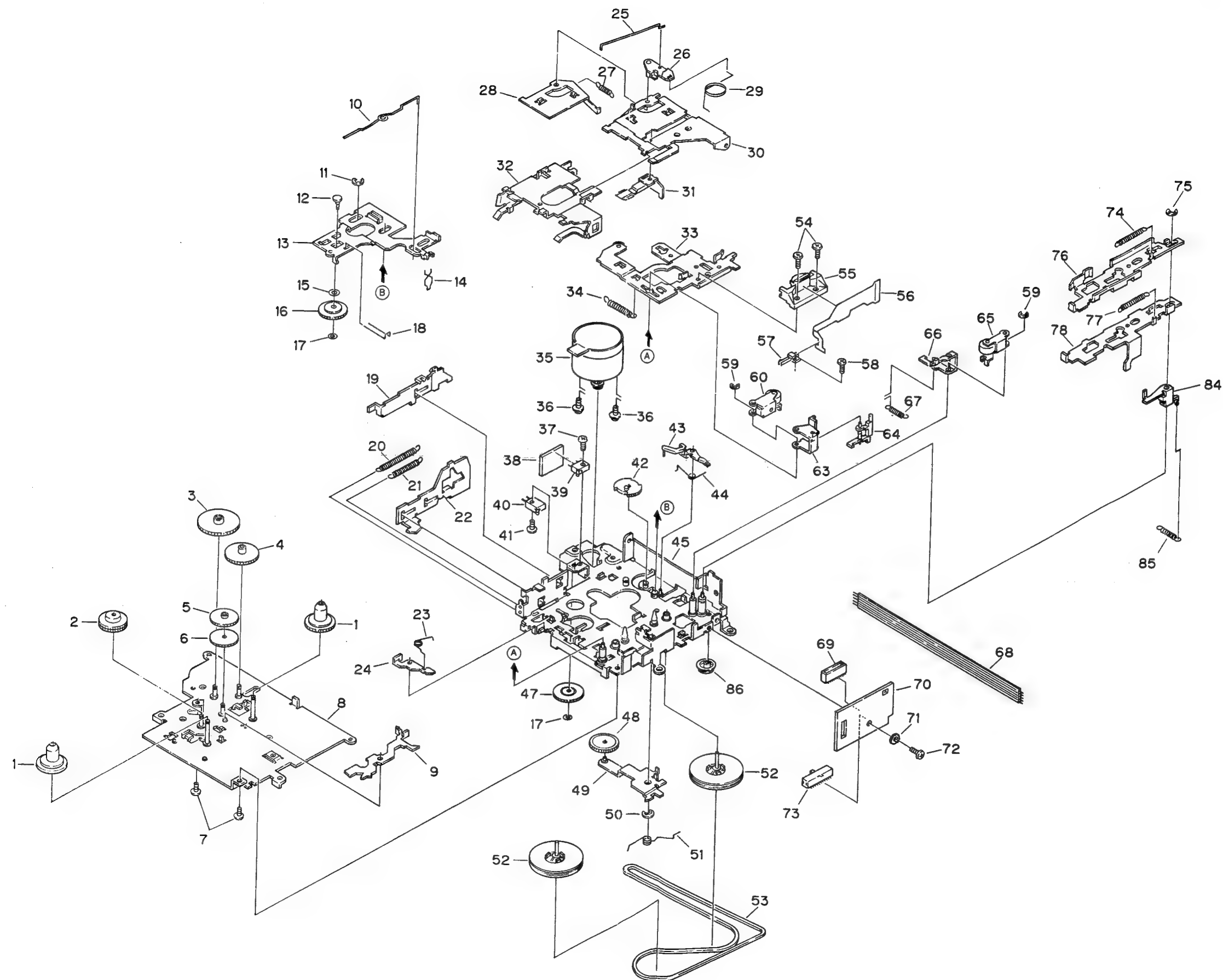


Fig. 33

20. PACKING METHOD

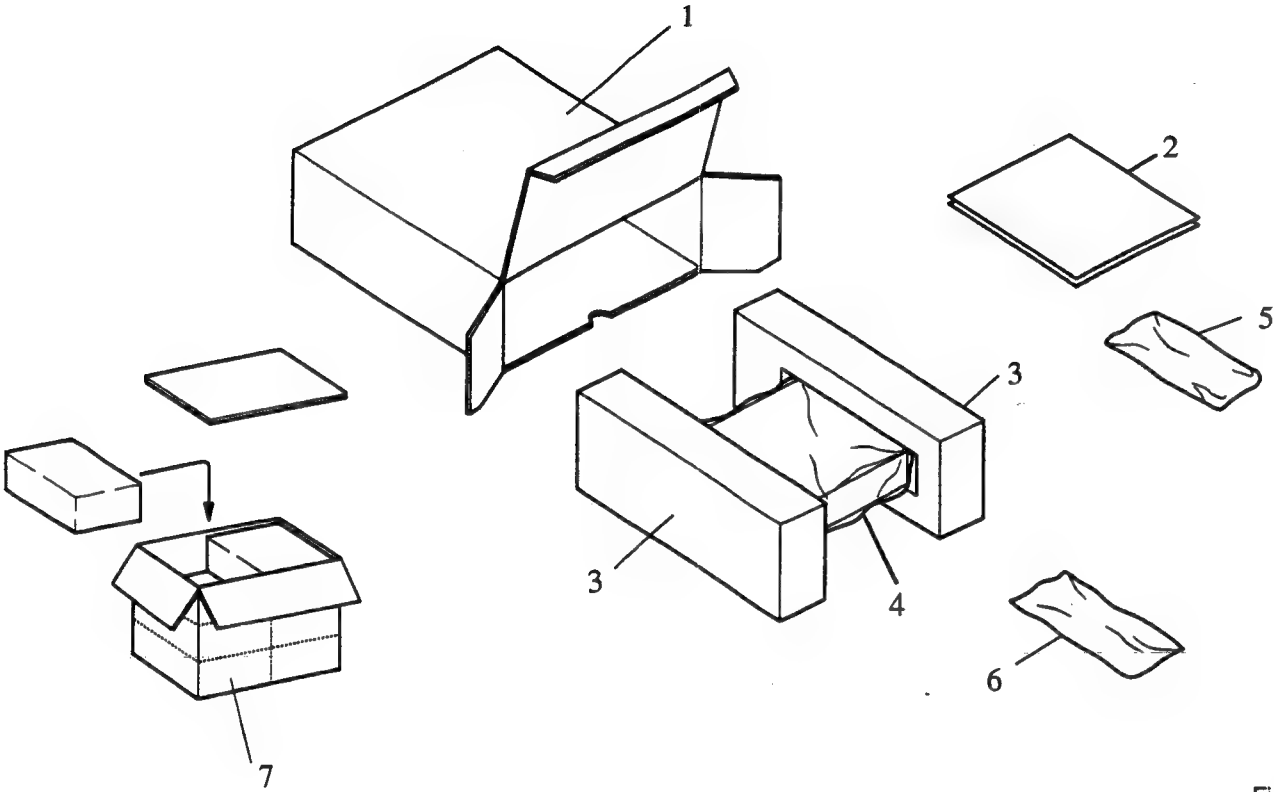


Fig. 34

●The KEH-M580/US,KEH-M4500/UC,KEH-M4500/X1H and KEH-M5550/ES Parts Lists enumerate the parts which differ from those enumerated in the KEH-M5500/UC Parts List only.
The parts other than those enumerated in the former are identical with those in the latter,to which you are requested to refer, accordingly.
The KEH-M5500/UC Parts List is given on page 65.

	KEH-M5500/UC	KEH-M580/US	KEH-M4500/UC	KEH-M4500/X1H	KEH-M5550/ES
Mark No. Description	Part No.	Part No.	Part No.	Part No.	Part No.
1 Carton	CHG2211	CHG2210	CHG2212	CHG2243	CHG2214
2-1 Owner's Manual	CRD1590	CRB1247	CRD1590	CRD1602	CRD1591
2-2 Card	ARY1048	*****	ARY1048	ARY1048	*****
2-3 Warranty Card	*****	CRY1053	*****	*****	*****
7 Contain Box	CHL2211	CHL2210	CHL2212	CHL2243	*CHL2214

Owner's Manual		
Part No.	Model	Language
CRD1590	UC	English,French
CRB1247	US	English
CRD1602	X1H	English,French
CRD1591	ES	English,French,Spanish,Arabic

● Parts List (KEH-M5500/UC)

Mark	No.	Description	Part No.	Mark	No.	Description	Part No.
	1	Carton	CHG2211		5-5	Bush	CNV1009
	2-1	Owner's Manual	CRD1590		5-6	Screw	CBA-102
*	2-2	Card	ARY1048		5-7	Strap	CNF-111
	3	Styrofoam	CHP1480		5-8	Nut(X2)	NF50FMC
	4	Cover	CEG1092		6	Cord Assy	CDE3111
	5	Accessory Assy	CEA1633		7	Contain Box	CHL2211
	5-1	Screw	CBA1002				
	5-2	Cord	CDE1289				
*	5-3	Polyethylene bag	CEG1011				
	5-4	Handle(X2)	CNC3664				

21. ELECTRICAL PARTS LIST

NOTE:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/□S□□□J, RS1/□□S□□□J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

● KEH-M5500/UC

Unit Number :
Unit Name : FM/AM Tuner Unit

MISCELLANEOUS

-----Circuit Symbol & No.	Part Name-----	Part No.
IC 51		PA4012B
IC 201		PA4017
Q 1		2SB709
Q 2		DTC124EK
Q 3		2SA1162
Q 201		2SK435
Q 202		2SC2412K
Q 203 205		DTC124EK
D 11 12		1SV128A-BB
D 201 204		MA157-MR
D 205		SVC203-M1
L 1 51	Inductor	CTF1241
L 11 12	Inductor	CTF1065
L 101	Inductor	CTF1170
L 201	Ferri-Inductor	CTF1026
L 203	Ferri-Inductor	LAU220K
L 204	Ferri-Inductor	LAU470K
L 205	Ferri-Inductor	LAU4R7K
T 51	Coil	CTC1065
T 201	Coil	CTB1020
T 202	Coil	CTB1004
T 203	Coil	CTB1040
T 204	Coil	CTE1037
T 205	Coil	CTE1038
T 206	Coil	CTE1039
CG 1		DSP-201M-S00B
CF 51 52	Ceramic Filter	CTF-182
CF 201	Ceramic Filter	CTF1041
CF 202	Filter	CTF1085
X 151	Ceramic Resonator	CSS1055
X 201	Crystal Resonator	CSS1014
VR 1	Semi-fixed 100kΩ (B)	CCP1025
VR 51 101 102	Semi-fixed 33kΩ (B)	VRTB4VS333
	FM Front End	CWB1035

RESISTORS

R 2 7	RS1/10S223J
R 3	RS1/10S683J
R 4	RS1/10S682J
R 5	RS1/10S0R0J
R 6 59	RS1/10S331J
R 8	RS1/10S331J
R 9 58	RS1/10S223J
R 10 14	RS1/10S0R0J
R 11	RS1/10S104J
R 12	RS1/10S470J

-----Circuit Symbol & No.	Part Name-----	Part No.
R 15		RS1/10S0R0J
R 54		RS1/10S472J
R 56		RS1/10S822J
R 64		RS1/10S222J
R 101		RS1/10S471J
R 102		RS1/10S822J
R 104		RS1/10S563J
R 105		RS1/10S332J
R 106		RS1/10S333J
R 107		RS1/10S102J
R 108		RS1/10S104J
R 111		RS1/10S123J
R 112		RS1/10S684J
R 151 152		RS1/10S152J
R 153		RS1/10S222J
R 201		RS1/10S220J
R 202		RS1/10S681J
R 203 206 214		RS1/10S222J
R 204 213		RS1/10S473J
R 205 209		RS1/10S470J
R 207		RS1/10S822J
R 208 211 212		RS1/10S103J
R 210		RS1/10S682J
R 215		RS1/10S153J
CAPACITORS		
C 1		CKSQYB102K50
C 2 3 104		CKSQYB103K50
C 4 59		CKSQYF473Z25
C 11 12 13 14		CCSQCH220J50
C 15		CKSQYB223K25
C 51		CKSQYF473Z25
C 52 53		CKSQYF473Z25
C 54		CCSQSL101J50
C 55		CKSQYB102K50
C 56		CKSQYF104Z25
C 57		CEAR68M50LL
C 58		CCSQCH150J50
C 60		CEALNP100M6R3
C 101		CKSQYB392K50
C 102		CKSQYB682K50
C 103		CKSQYB392K50
C 105		CEA2R2M50LL
C 106		CEA4R7M35LL
C 107 108		CKSQYB222K50
C 110		CEA010M50LL
C 111		CEA100M16LL
C 112		CEA0R1M50LL
C 151 152		CKSQYB563K25
C 153		CSZAR47M35L
C 154 155 156		CEA3R3M50LL
C 157		CEA101M10LL
C 201 223 228		CKSQYB103K25
C 202 212		CKSQYB332K50
C 203 215 216 219 226		CKSQYF473Z25
C 204 208 210		CKSQYB223K25

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-----Circuit Symbol & No.	Part Name-----	Part No.	-----Circuit Symbol & No.	Part Name-----	Part No.
R 504 971 972 973 974		RD1/4PS103JL	C 303 304		CEALNP100M16
R 507		RD1/4PS392JL	C 305		CEA470M16LS
R 508		RS1/10S823J	C 306 403		CEA101M10LS
R 509 715		RD1/4PS473JL	C 307 308		CEAR68M50LS2
R 510 975		RD1/4PS472JL	C 309		CKSYF104Z25
R 511 520 951		RS1/8S102J	C 401		CKSQYB103K25
R 512		RS1/8S222J	C 402		CCSQCH330J50
R 514 957 986		RS1/10S563J	C 404		CEA0R1M50LS2
R 515 617 706 708 965 966		RS1/10S473J	C 451 452 603 604		CCSQCH330J50
R 516		RS1/10S182J	C 453 454		CKSQYB332K50
R 517		RS1/10S101J	C 455 456		CKSQYB333K25
R 518		RS1/10S331J	C 457 458 607 608		CEA4R7M35LS
R 519 953 960 989		RS1/8S472J	C 459 460		CCSQCH330J50
R 521		RS1/10S152J	C 461 462		CEAR33M50LS2
R 522 526 607 608 609 610		RS1/10S222J	C 463 564 606 957		CEA100M16LS2
R 523		RS1/8S821J	C 501		CASQA100M10
R 524		RS1/8S101J	C 502	0.047 μ F	CCG1008
R 551 552		RD1/4PM102J	C 503 511		CKSQYB103K25
R 553 554		RS1/10S471J	C 504 505 506 508		CKPY103M16L
R 555 556 557 558		RD1/4PS4R7JL	C 507		CKSYB473K25
R 559		RD1/4PM223J	C 509		CKSYB103K25
R 562		RS1/8S472J	C 510		CCSQCH101J50
R 563		RS1/10S223J	C 512		CKSQYB681K50
R 564		RD1/4PM222J	C 513		CCSCH101J50
R 571 616 958 963 978 983 984 987		RS1/10S472J	C 514	4.7 μ F/16V	CCH1005
R 601 602 603 604		RS1/10S473J	C 551 552		CEHAS3R3M50
R 605 606		RS1/10S104J	C 553 554		CKSQYB102K50
R 611 612 613 614		RS1/10S113J	C 555 556		CEHAS330M10
R 701 702 703 704		RS1/10S681J	C 557 558 559 560		CFTNA224J50
R 707 856		RD1/4PS104JL	C 561		CEA100M16LS2
R 709 970		RS1/8S103J	C 563		CEA101M16LL
R 714		RD1/4PS472JL	C 565		CEA101M10L2
R 759		RS1/10S102J	C 566	4700 μ F/16V	CCH1068
R 851 852 853 854		RS1/10S102J	C 567		CEA100M16LS2
R 855		RS1/10S104J	C 601 602		CEA2R2M35NPLL
R 857 858		RS1/10S682J	C 605		CEA101M10LS
R 859 860		RS1/10S471J	C 609		CKSQYB103K25
R 861 862		RS1/10S223J	C 702		CASQA4R7M10
R 863		RS1/10S103J	C 703		CKPYB102K50L
R 864		RS1/10S123J	C 704		CCSQCH100D50
R 865		RS1/10S470J	C 708 953 961		CKSQYB473K25
R 952 981		RD1/2PS681JL	C 709		CKSYF104Z25
R 954 961		RS1/8S473J	C 710		CKSQYB102K50
R 959		RS1/10S104J	C 851 852		CEA2R2M50LS2
R 962		RD1/4PM473J	C 853 854		CCSQCH101J50
R 964		RD1/4PS220JL	C 855		CEAS221M10
R 969		RS1/8S474J	C 856		CEA100M16LS2
R 976 977		RS1/10S1R0J	C 857 858		CEA4R7M35LS
R 979		RD1/4PS122JL	C 859		CKSQYB103K25
R 980		RS1/8S472J	C 861 862		CEA330M16L2
R 982		RD1/4PS122JL	C 951 952		CEA470M10L2
R 985		RD1/4PS222JL	C 954		CEA221M16L2
R 990		RS1/8S1R0J	C 955		CKSYF105Z25
			C 956		CEA331M10L2
			C 958	1000 μ F/6.3V	CCH1112
CAPACITORS					
C 251 252	2.2 μ F/50V	CCSQCH471J50	C 959 960 963		CEA101M10LS
C 253 254		CCH1145	C 962		CEA470M16LS
C 255 256		CEA470M16LS	C 964		CKSYB103K25
C 257 258		CKSQYB103K25			
C 259 260		CKSQYB223K25			
C 261 262		CEA4R7M35LS	Unit Number :		
C 263		CEA101M10LS	Unit Name : Key Board Unit		
C 264		CEA100M16LS2			
C 265		CEA100M16LS2	MISCELLANEOUS		
C 301 302		CEA010M50LS2			
			IC 901		S-80740AH-B4
			IC 902		PD4285
			IC 903		LC7582A
			D 901 902 903 904 905		MA143-MC
			L 901	Inductor	CTF1243

-----Circuit Symbol & No.	Part Name-----	Part No.
X 901	500kHz	CSS1069
IL 901 902 903	Lamp 40mA 14V LCD	CEL1249 CAW1168

RESISTORS

R 901 902 903 904 905	RS1/8S103J
R 906	RS1/10S104J
R 907	RS1/10S473J
R 908	RS1/10S103J
R 909 910 911 912 913 914 915 916 917	RS1/10S471J

CAPACITORS

C 902	CKSYF105Z25
C 903	CCSQCH331J50
C 904 905	CKSYB103K50
C 906 907	CCSQCH221J50
C 908 909 910 911 912	CKSYB152K50

Unit Number :
Unit Name : P.C.Board(A)

D 1	1SR-35-100A
S 2	Switch (FWD/REV) ESH1003

Unit Number :
Unit Name : P.C.Board(B)

S 3	Switch (Tape/Tun)	ESN1011
S 4	Switch (MuteB)	ESH1004

Miscellaneous Parts List

S 1	Switch (MuteA)	ESN1005
HD 1	Head Assy	EXA1163
M 1	Motor Unit	EXA1264
SO 1	Solenoid	EXP1010

●The KEH-M580/US, KEH-M4500/UC, KEH-M4500/X1H and KEH-M5550/ES Parts Lists enumerate the parts which differ from those enumerated in the KEH-M5500/UC Parts List only.

The parts other than those enumerated in the former are identical with those in the latter, to which you are requested to refer, accordingly.

The KEH-M5500/UC Parts List is given on page 67.

FM/AM Tuner Unit

	KEH-M5500/UC KEH-M580/US KEH-M4500/UC KEH-M4500/X1H	KEH-M5550/ES
No.	Part No.	Part No.
D11,12 Q3 VR1 L11,12 R3	1SV128A-BB 2SA1162 CCP1025 CTF1065 RS1/10S683J	..... ..... CCP1019 RS1/10S124J
R8 R9 R11 R12 R13	RS1/10S331J RS1/10S223J RS1/10S104J RS1/10S470J .....	..... ..... ..... ..... RS1/10S0R0J
C11,12,13,14 C15 C57	CCSQCH220J50 CKSQYB223K25 CEAR68M50LL	..... ..... CSZAR33K35

Tuner Amp Unit

	KEH-M5500/UC	KEH-M580/US	KEH-M5550/ES
No.	Part No.	Part No.	Part No.
D706 D707 R251,252 C251,252	1SS270 RS1/10S104J CCSQCH471J50	1SS270 RS1/10S223J CCSQCH331J50	..... 1SS270 RS1/10S104J CCSQCH471J50

Tuner Amp Unit

	KEH-M5500/UC	KEH-M4500/UC KEH-M4500/X1H
No.	Part No.	Part No.
IC301 IC401 Q251,252 Q401 D704	CXA1102P AN6263N 2SC2458 DTC114YS 1SS270	.........................
VR301,302 R259,260 R261,262 R263,264,305 R269,270	VRTB6VS333 RS1/10S272J RS1/10S332J RS1/10S104J RS1/10S682J	..... ..... ..... ..... RS1/10S183J
R271,272 R301 R302 R303,304 R401,402	..... RS1/10S103J RS1/10S433J RS1/10S273J RS1/10S822J	RS1/10S0R0J RS1/10S102J
R403 R404 R714 C259,260 C261,262	RS1/10S100J RS1/10S684J RD1/4PS472JL CKSQYB223K25 CEA4R7M35LS	.........................

	KEH-M5500/UC	KEH-M4500/UC KEH-M4500/X1H
No.	Part No.	Part No.
C265	CEA100M16LS2	.....
C301,302	CEA010M50LS2	.....
C303,304	CEALNP100M16	CEALNP4R7M16
C305	CEA470M16LS	.....
C306,403	CEA101M10LS	.....
C307,308	CEAR68M50LS2	.....
C309	CKSYF104Z25	.....
C401	CKSQYB103K25	.....
C402	CCSQCH330J50	.....
C404	CEA0R1M50LS2	.....

P.C.Board(A)

	KEH-M5500/UC KEH-M5550/ES	KEH-M580/US	KEH-M4500/UC KEH-M4500/X1H
No.	Part No.	Part No.	Part No.
D1	1SR-35-100A	1SR-35-100A	.....

Miscellaneous Parts List

	KEH-M5500/UC KEH-M5550/ES	KEH-M580/US	KEH-M4500/UC KEH-M4500/X1H
No.	Part No.	Part No.	Part No.
HD1	EXA1163	EPB1015	EXA1163
SO1	EXP1010	EXP1010	.....

22. CIRCUIT DESCRIPTION

• Indicating an Error Number

If the CD should fail to operate in multi mode, or if an error has taken place during the operation and resulted in an error, the player will enter into the error mode. And the cause of such error is numerically indicated.

This is aimed at assisting an analysis or a repair.

(1) Basic Means of Display

- With ERROR indicated in "MODE" on P-BUS Display date, an error code is transmitted by the use of MIN and SEC.

Identical date are transmitted with MIN and SEC.

- Examples of Head Unit Display

E-XX (4 digits)

(2) Error Codes

Error Code	Classification	Mode	Description	Detail/Cause
10	ELECTRIC	SET UP	Carriage home failure	Unmovable to and from the inner circumference → Home switch failed and/or carriage improper moved
11	↑	↑	Focus failure	Focussing failed → Disk scarred or stained on the back or vibrating hard
12	↑	↑	SET UP failure	Spindle failed to lock or subcode extraordinary → Spindle defective, disk other than audio and ROM
30	↑	SEARCH	Search time out	Target address failed to reach → Carriage/tracking improperly and/or disk scarred
A0	SYSTEM	—	Power failure	Power overvoltage or short circuit detected → Switching transistor defective and/or power abnormal
50			An error upon ejection	MAG SW release time has timeout.
60			An error while putting in and out the tray	Tray in/out time has timeout. Tray is caught when put in.
70			An error upon elevation	Elevation time has timeout.
80			An error with an empty magazine inserted	No disk is available.

*If TOC has failed to be read in, the operation will continue anyway.

Error Code A0 is peculiar to the this unit and inapplicable to another future CD player.

• **New Test Mode (aging operation and setup analysis)**

The CD multiple plays in the normal mode. After being set up, it will display FOK (focus), LOCK (spindle), sub-code, sound skip, protection against a mechanical error or the like, occurrence of an error, cause and time of an expiry, and disc number.

During the setup, the CD software operation status (internal RAM and C-point) is displayed.

The software on the head unit side does not involve any special problem but runs normally.

Since it is necessary to cope with the error number display function.

- (1) How to Put in the NEW TEST Mode
See the test mode flow chart page 16.
- (2) Relations of keys between TEST and NEW TEST Modes.

P-BUS Commands	Keys	Test Mode Regulator OFF	Regulator ON	New Test Mode Play in progress	New Test Mode Error Protection } Talking place
B0	BAND/REL	Regulator ON	Regulator OFF	BAND/REL	Time of occurrence } Selected Cause of error
B1	TRACK +	—	FWD-KICK	TRACK +	—
B2	TRACK —	—	REV-KICK	TRACK —	—
B3	SCAN	—	TRACKING CLOSE	SCAN	—
B4	RPT/RDM	—	TRACKING OPEN	RPT/RDM	—
B5	ITP	—	FOCUS CLOSE	ITP	—
B6	—	—	FOCUS OPEN	—	—
B7	—	—	Jump-OFF	—	—
B8	TRACK+/-	To new Test Mode	Jump-Mode selected	TRACK+/-	Occurrence TNo } Selected Time of occurrence

Operations, such as EJECT, CD ON/OFF, etc. are to be performed normally

(3) Error Cause (Error Number) Code

Error Code	Classification	Mode	Description	Cause/Detail	
40	ELECTRIC	PLAY	FOK = L 100 ms	Put out of focus	Scar, Stain, Vibration, Servo defect, etc...
41	↑	↑	LOCK = L 100 ms	Spindle unlocked	
42	↑	↑	Subcode unacceptable 500 ms	Subcode fails to read	
43	↑	↑	Sound skipped	Last address memory operated	

*The error code is identical with those in the normal mode.

(4) Indicating an Operation Status During Setup

Status No.	Description	Protection operation
01	Carriage home mode started	None
02	Carriage moving on the internal circumference	10-second time out
03	Carriage moving on the external circumference	10-second time out
11	Setup started	None
12	Spindle turn/Focus search started	None
13	Waiting for focus closing	Failure to focus closing
14	Spindle kicked and focus checked	Out of focus
15	Tracking closed and focus checked	Out of focus
17	Carriage closed and focus checked	Out of focus
18	Lock subcode } Waiting	Failure to lock, Subcode failed to read out of focus
19	End	None

(5) Example of 7-segment Display.

(a) SET UP in progress

TRACK	MIN	SEC
11	11	11
TRACK		
11		
MIN	SEC	
11	11	

While in the TEST MODE, a status number is indicated in TNO, MIN and SEC.

(b) Operation (PLAY, SEARCH, etc.) in progress Perfectly identical with that in the multi mode.

(c) Protection/Error upon occurrence

E-XX

While in the error mode, an error number is displayed in MIN and SEC.

Select the display with the BAND/REL key.

TRACK	MIN	SEC
10	40	05

TRACK		
10		

MIN	SEC
40	05

} Select the display with the TRACK +/- key.

While in the PLAY MODE, an absolute time is indicated in TNO, MIN and SEC.

Service Manual

ORDER NO.
CRT1328

CASSETTE MECHANISM ASSEMBLY

CX-197

NOTE

- This service manual describes operation of the cassette mechanism incorporated in models listed in the table below.
- When performing repairs use this manual together with the specific manual for the model under repair.

Model	Service Manual	Cassette Mechanism Assembly
KE-1700B/IT KE-1700SDK/WG KE-1730B/EW KE-2700B/IT KE-2700SDK/WG KE-2730B/EW	CRT1325	EXK1710
KE-1700QR/UC KE-2303QR/UC KE-2750QR/ES	CRT1327	EXK1710
KE-2033/UC KE-2033/XSG/UC KE-2828/XSG/UC KE-2828/ES, UC	CRT1331	EXK1710
KE-3838/UC, ES KE-3838/XSG/UC KE-3838/XML/UC	CRT1332	EXK1710
KE-1700B/XML/IT	CRT1336	EXK1710
KE-1730B/XIB KE-1730B/XML/EW KE-1730B/XSG/EW	CRT1337	EXK1710
KE-2630B/XIB KE-2730B/XIB	CRT1340	EXK1710

Model	Service Manual	Cassette Mechanism Assembly
KE-1700QR/XML/UC	CRT1339	EXK1710
KE-3700SDK/WG KE-3730B/EW KE-3700B/IT	CRT1326	EXK1720
KE-2700QR/UC KE-3700QR/UC KE-3750QR/ES	CRT1327	EXK1720
KE-4848/ES, UC KE-4848/XML/UC KE-4848/XSG/UC	CRT1330	EXK1720
KE-250/US KE-3033/UC KE-3033/XSG/UC	CRT1332	EXK1720
KE-3730B/XIB	CRT1338	EXK1720
KE-450QR/US	CRT1327	EXK1750
KE-350/US	CRT1330	EXK1750

1. DISASSEMBLY

Note: Always use new washer and E washer at the time of reassembling.

● How to Remove the Belt and Motor

1. Remove screw A fixing the FR lever. (Fig.1)
2. Remove three screws B fixing the sub-chassis unit. Move the unit first in Direction A, then in B direction, and lift it upward for removal. (Fig.2)
3. The belt can now be removed. (Fig.3)
4. Remove two screws C. The motor can be removed. (Fig.3)

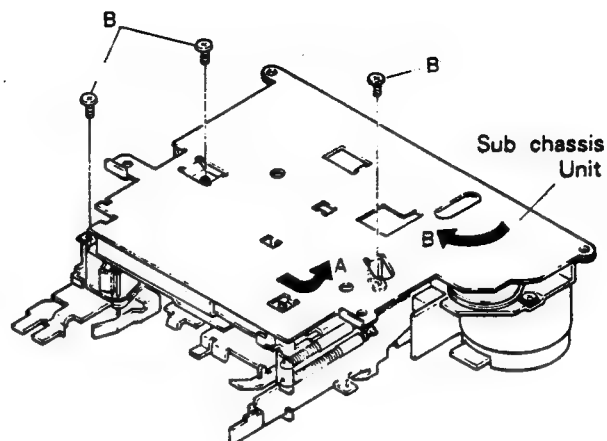


Fig. 2

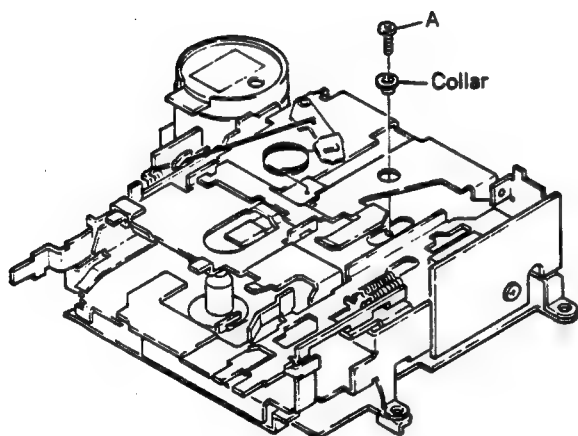


Fig. 1

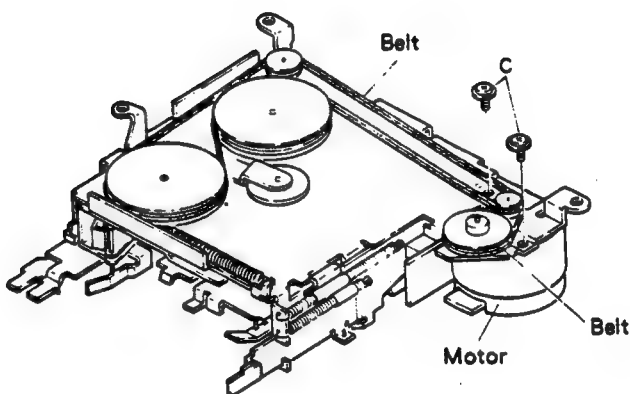


Fig. 3

● How to Remove the Pinch Roller Unit and Head

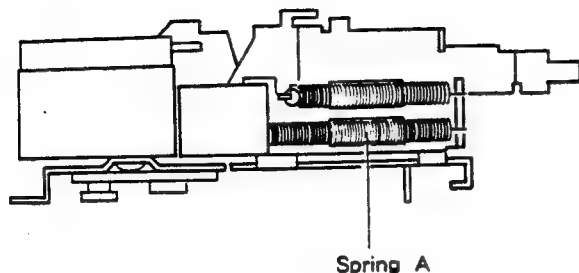


Fig. 4

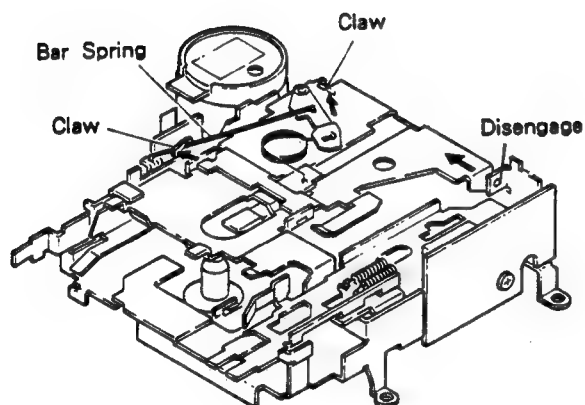


Fig. 5

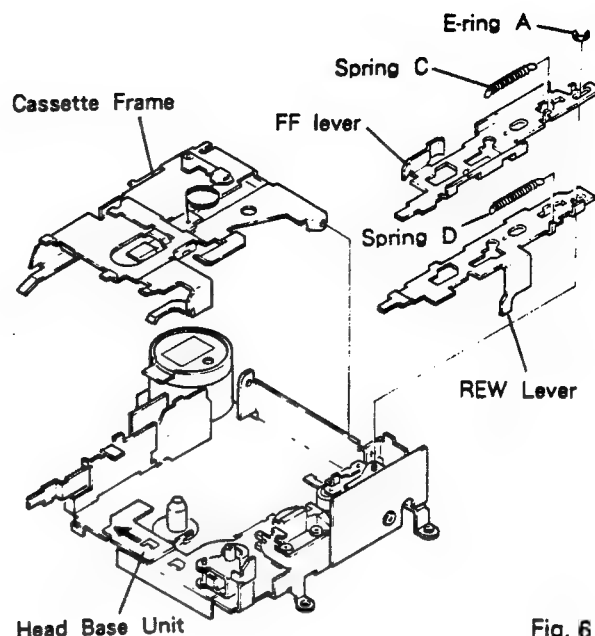


Fig. 6

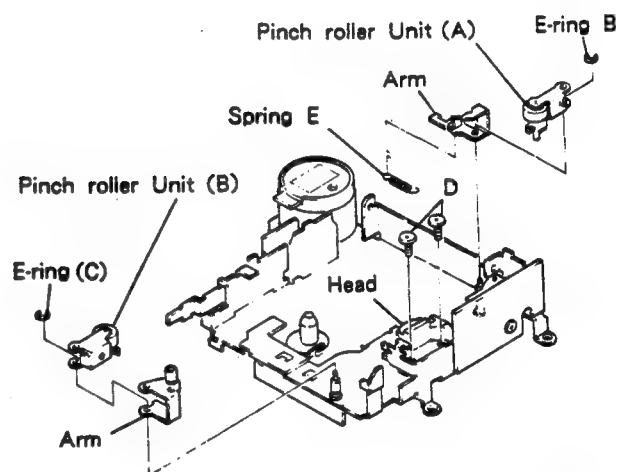


Fig. 7

1. Remove spring A. (Fig.4)
2. Extend claws (2 points). (Fig.5)
3. Remove bar Spring. (Fig.5)
4. Disengage projection by moving in a direction of arrow mark. (Fig.5)
5. The cassette frame is removed. (Fig.6)
6. Remove springs C and D. (Fig.6)
7. Remove E-ring A. (Fig.6)
8. Remove FF/REW levers. (Fig.6)

9. Move head base unit forward. (Fig.6)
10. Remove spring E. (Fig.7)
11. Remove E-ring B. The pinch roller unit (A) can be removed. (Fig.7)
12. Remove E-ring C. The pinch roller unit (B) can be removed. (Fig.7)
13. Remove two screws D. The head can be removed. (Fig.7)

2. ADJUSTMENT

2.1 CHECK POINTS OF CASSETTE MECHANISM

<p>Confirm the following items when replacing parts of the cassette mechanism.</p>	<p>■ Tape speed deviation: $3,000 \begin{smallmatrix} +90 \\ -30 \end{smallmatrix} \text{ Hz}$ $(4.76 \text{ cm/s} \begin{smallmatrix} +3 \\ -1 \end{smallmatrix} \%)$</p> <p>Using an NCT-111, measure the speed at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 – 6 seconds.</p>	<p>■ Wow and flutter: Less than 0.2% (WRMS)</p> <p>Using an NCT-111, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 – 6 seconds.</p>
<p>■ Fast forward and rewinding time: 100 – 120 seconds</p> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<p>■ Winding torque: $35 - 65 \text{ g} \cdot \text{cm}$</p> <p>Using a cassette type torque meter (100 g·cm), measure the minimum value while in the play mode. Measuring time shall be 2.5 – 6 seconds.</p>	<p>■ F.F. torque: $70 - 120 \text{ g} \cdot \text{cm}$</p> <p>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the F.F. mode.</p>
<p>■ REW torque: $70 - 120 \text{ g} \cdot \text{cm}$</p> <p>Using a cassette type torque meter (120 g·cm), measure the value when the tape stops in the REW mode.</p>	<p>■ Back tension torque: $2 - 6 \text{ g} \cdot \text{cm}$</p> <p>After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	<p>■ Cassette loading force: Less than 0.7 kg</p> <p>Push the center of the cassette and measure the force with a tension meter (3 kg).</p>

2.2 AZIMUTH ADJUSTMENT

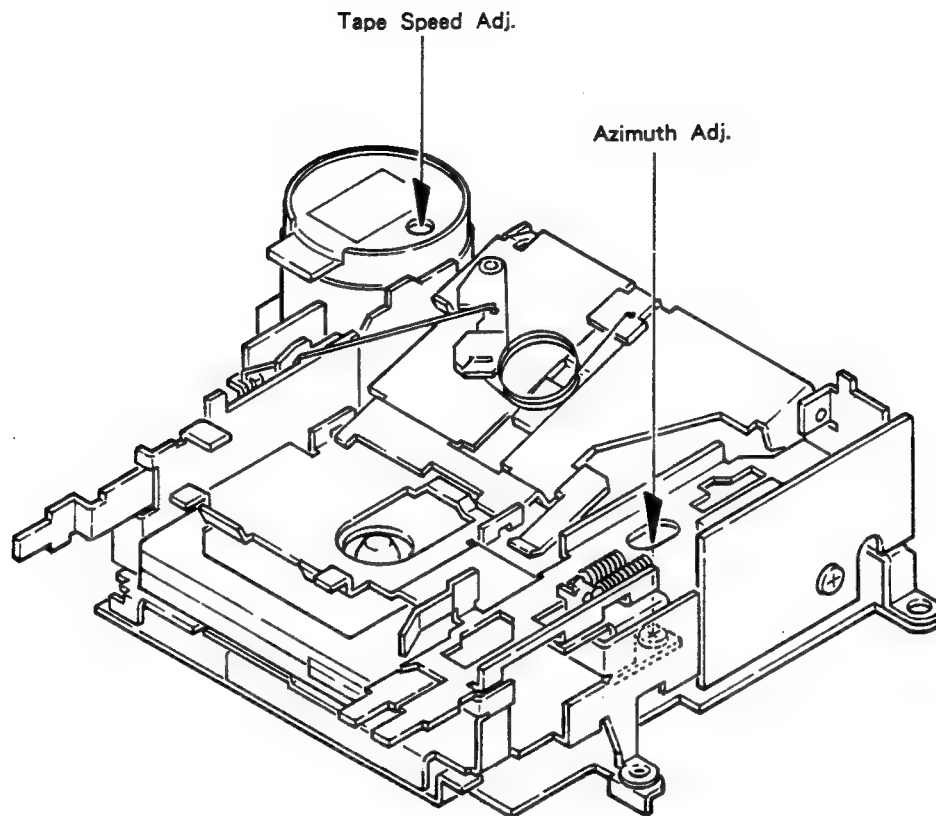


Fig. 8

● To Adjust (EXK1750)

1. Play "A" side of NCT-110 (10kHz, - 10dB). Adjust the screw for maximum output in forward and reverse directions.
2. Play "B" side in forward and reverse directions to confirm adjustment.

2.3 TAPE SPEED ADJUSTMENT

1. Reproduce NCT-111 (3kHz, - 10dB). Adjust the semifixed resistor so that frequency counter shows 3010Hz (+80Hz, - 40Hz).

3. MECHANISM DESCRIPTION

● Loading operation

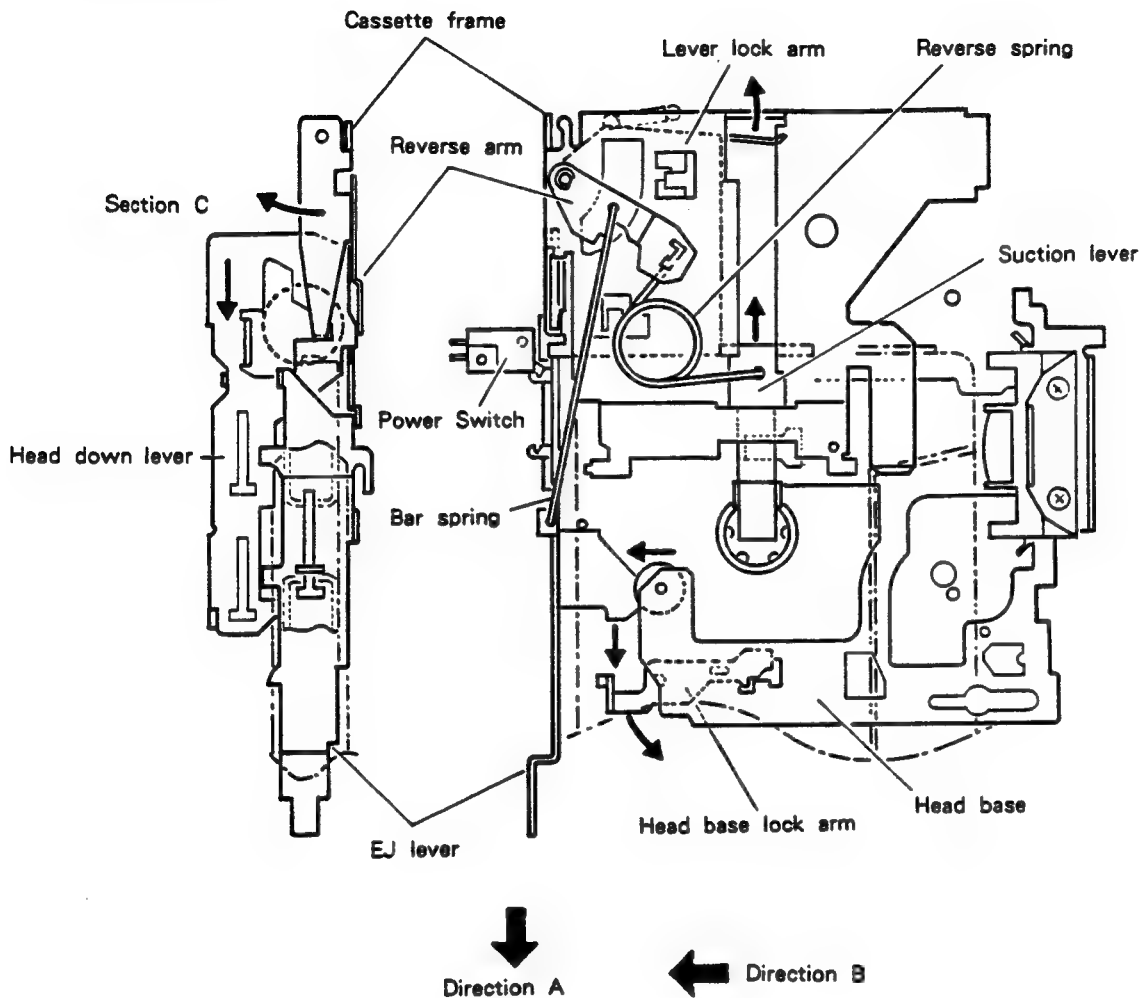


Fig. 9

1. A cassette tape, when inserted, pushes a suction lever.
The reverse spring rotates to move past the reverse point. Then, the cassette is drawn by a force of a reverse spring (suction operation).
2. After suction, the lever lock arm is pressed to be unlocked.
3. The head down lever is unlocked and the lever moves in Direction A.
4. While moving, the EJ lever turns ON the power switch.
5. The cassette frame engaged to the section C of the head down lever turns. (Cassette drop operation)
6. At the stroke end, the head down lever turns the head base lock arm.
7. A Stopper of the head base lock arm is released, and the head base moves forward (Direction B).

● MS Operation (EXK1720, EXK1750)

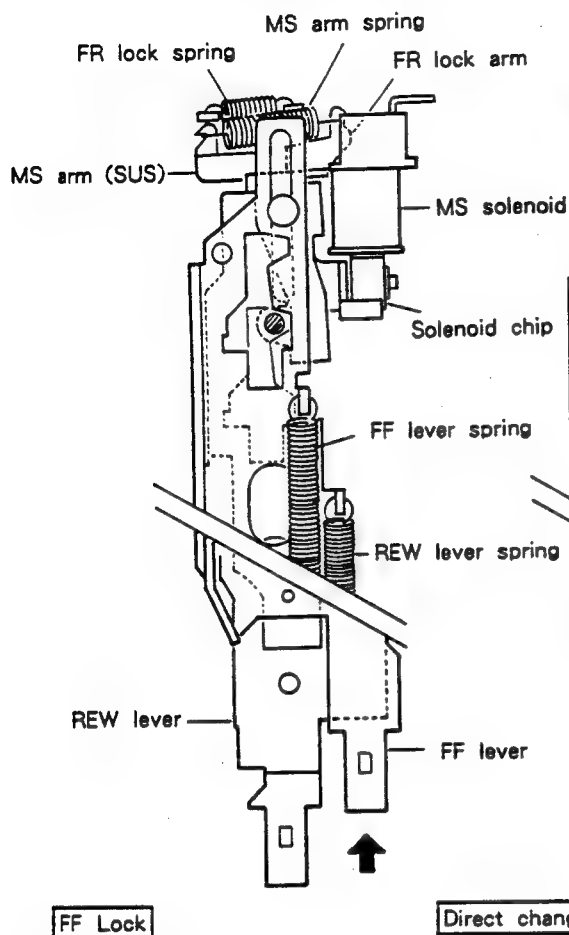


Fig. 10

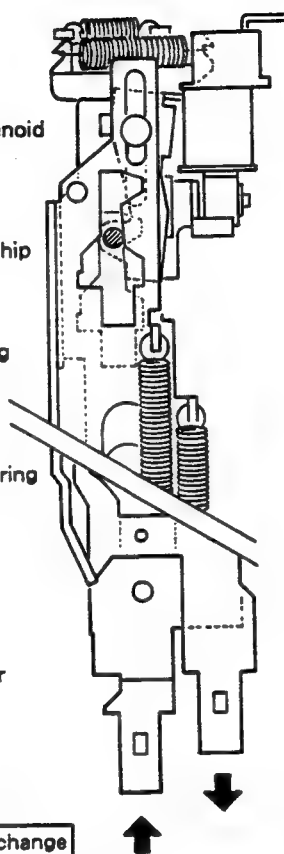


Fig. 11

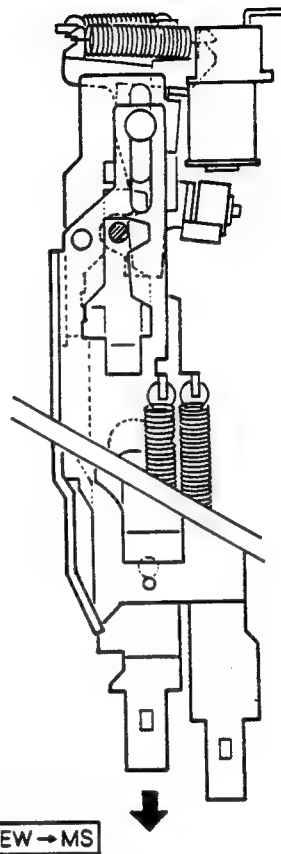


Fig. 12

1. The MS solenoid is normally energized to attract the solenoid chip during play and F/R operation. The solenoid chip applies counterclockwise force to the MS arm, thereby putting the FR lock arm into rotation via the MS arm spring. The MS lock shaft of FR lock arm unit catches a taper in a different hole of the FF (or REW) lever to lock the FF (or REW) lever.
2. In case of direct change, pressing the unlocked FF or REW lever causes the lever taper to turn the FR lock arm clockwise. This in turn presses the MS arm spring and FR lock spring to release the locked lever.
3. When the no recording section is caught and the power supply to the solenoid is cut off, the solenoid loses the attraction force and disables locking of the F/R lever. As a result, the F/R lever is unlocked. (This unlocking occurs because the force to retain the lever cannot be generated by the FR lock spring only.)

● Direction Changeover Operation

(1) FWD play operation

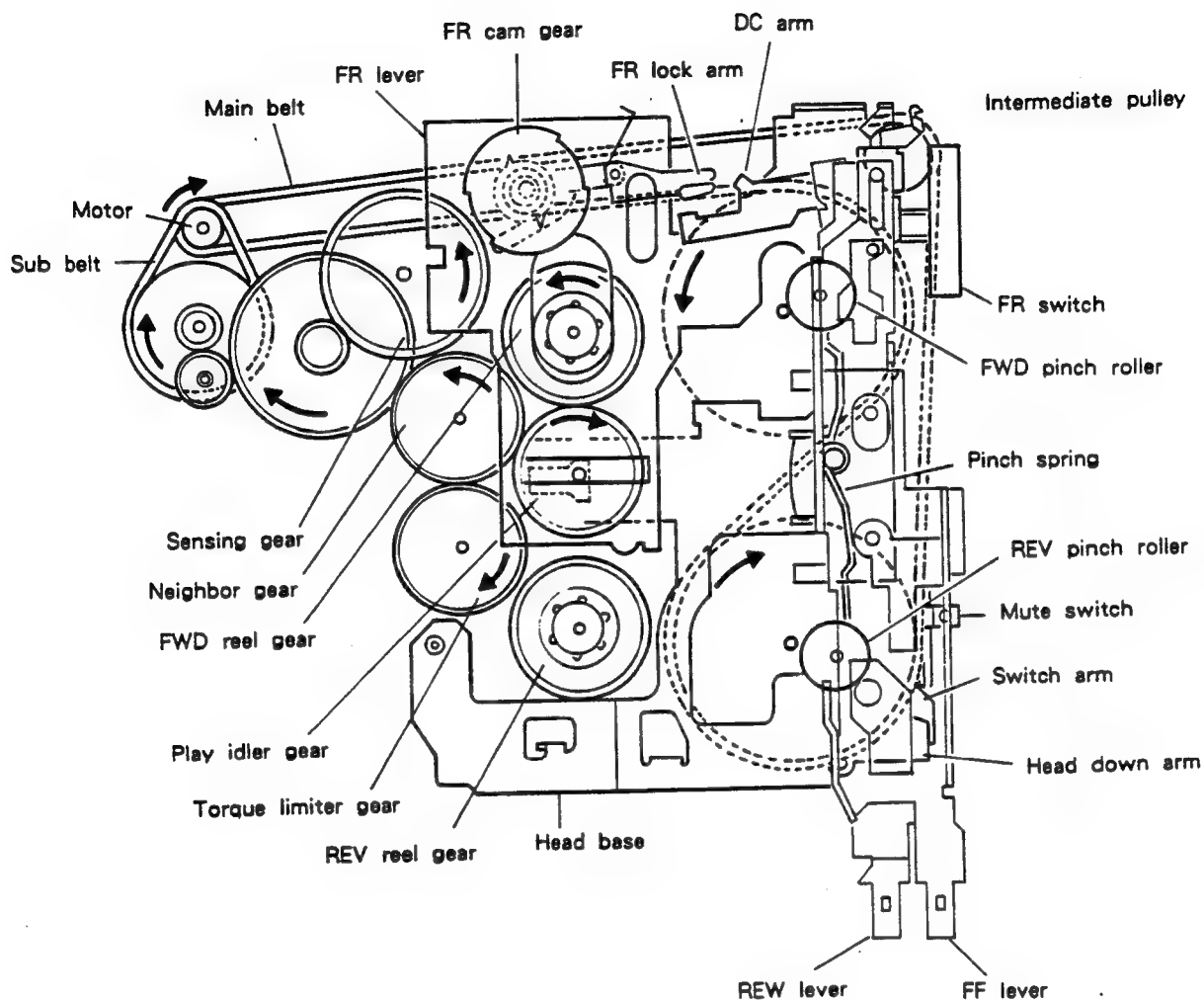


Fig. 13

When the FR lever is in the top position, the pinch spring is in the upper position to press the FWD pinch roller. The FR switch also moves upward and its reaction causes downward force on the FR lever. The spring attached to the FR lever applies upward force to the play idler gear from above to engage it with the neighbor gear and FWD reel gear.

The tape is driven in the FWD direction by a running motor and taken up by the REV reel gear via the torque limiter gear.

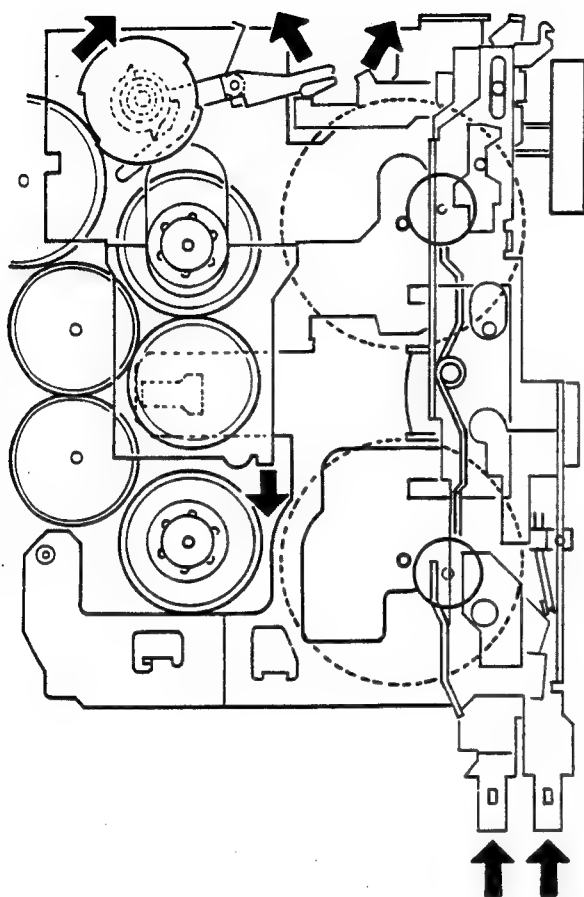
(2) Direction change operation

Fig. 14

The direction is changed by pressing FF and REW levers simultaneously. The DC arm turns along a cam groove of FF and REW levers to turn the FR lock arm. As the FR lever applies force from above downward, the FR cam gear turns and the notch meshes with the sensing gear.

As a result, the FR lever moves downward.

When FF and REW levers are kept pressed, the lock arm contacts the outside of the FR cam gear to prevent changeover between FWD and REV. Pressing FF and REW levers also cause the mute switch to be turned ON. In other words, muting is valid while FF and REW levers are pressed. (Fig.14)

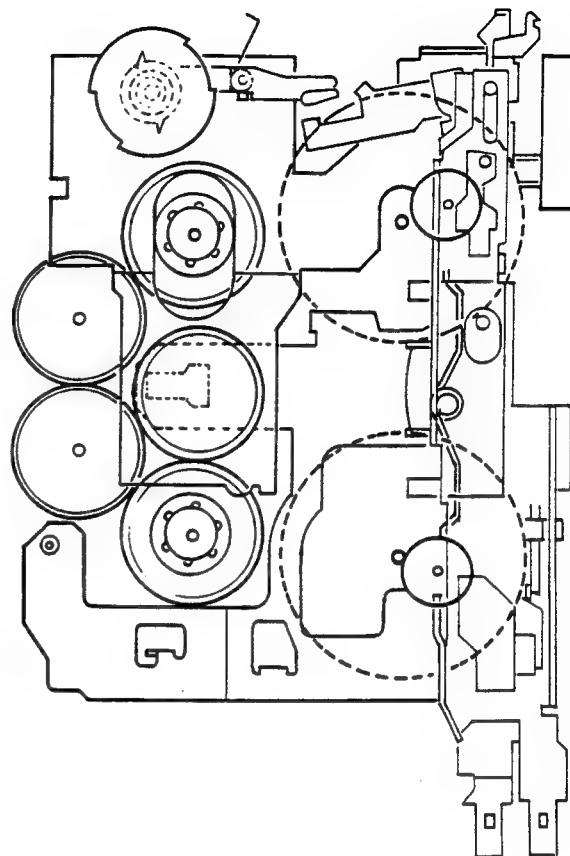
(3) REV play operation

Fig. 15

Moving the NR lever up and down causes changeover among the pinch roller, FR switch, and play idler gear. With FF and REW levers having been returned, the FR lock arm returns to the normal lock position and locks the gear when the FR gear completes an one-half turn. The mute arm also returns to turn OFF the mute switch. The reverse play state is thus obtained. (The same applies to changeover from REV to FWD.)

● FF/REW Operation

(1) FWD play operation

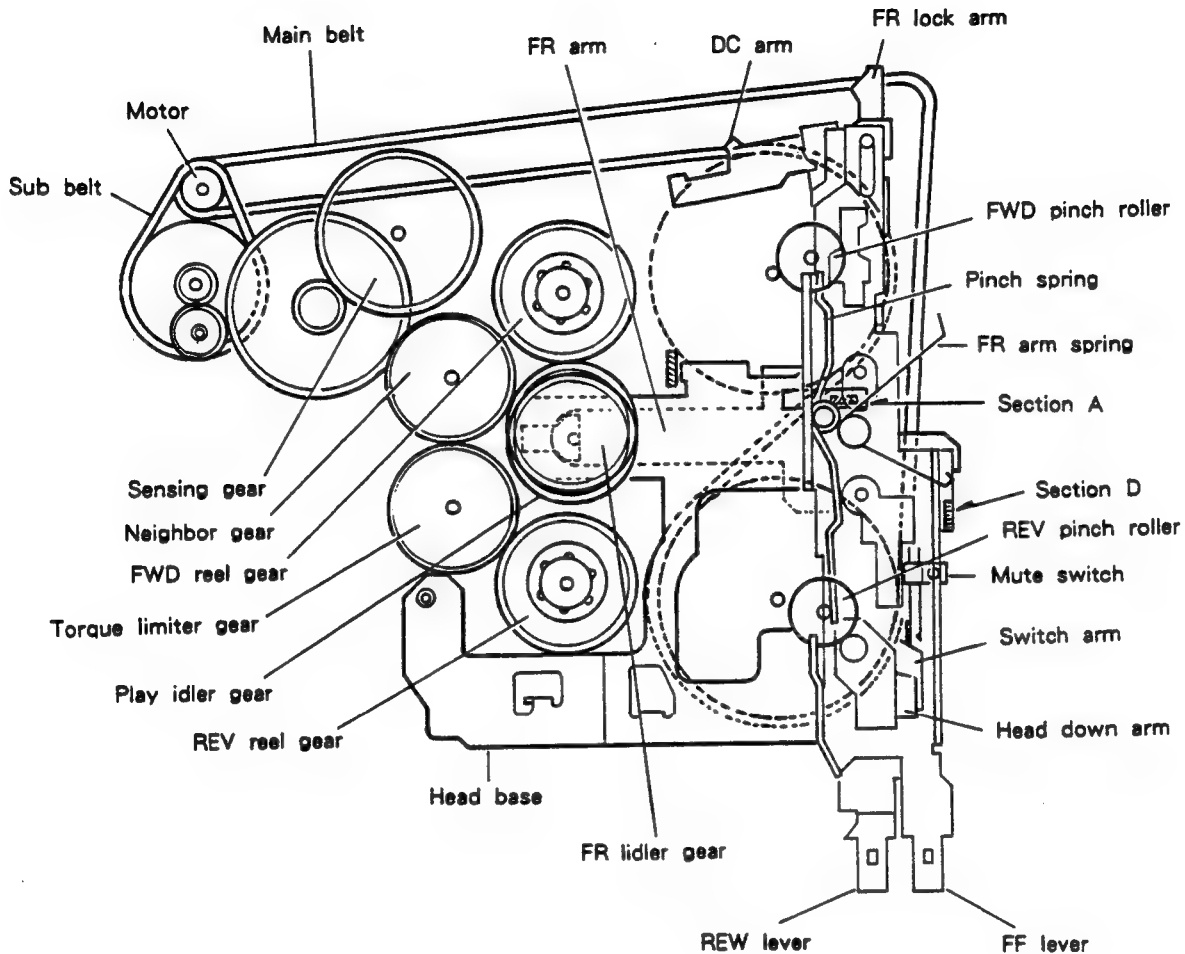


Fig. 16

In the FWD (REV) play state, the head base is fixed by a chassis stopper. The pinch spring presses the pinch roller into contact with a capstan to drive forward the tape. The REV reel gear takes up the tape via the torque limiter gear. In this case, the FR idler gear on the FR arm is centered by Section A of the head base and thus not rotating.

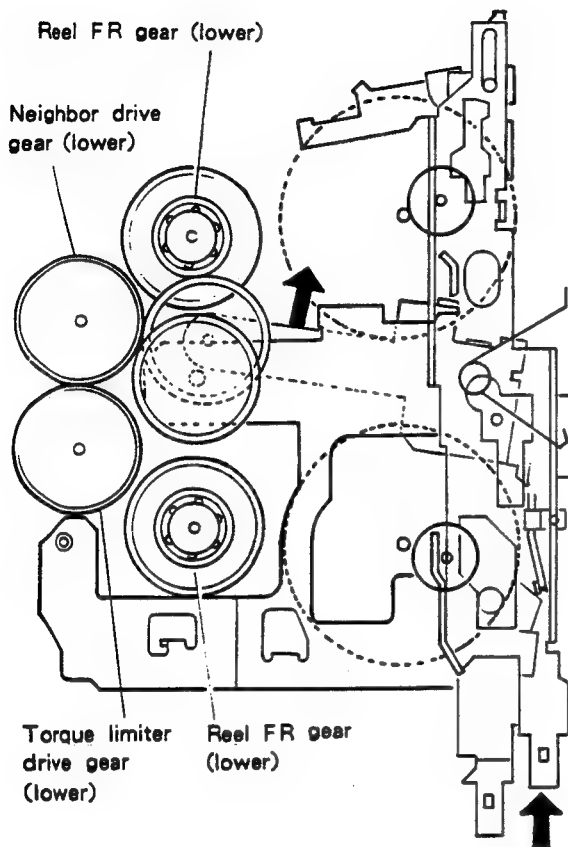
(2) FF Operation

Fig. 17

FF operation is obtained by pressing and locking the FF lever. As the FF lever is pressed, the switch arm turns to turn ON the mute switch. The head base is moved backward along the FF lever cam groove.

As the head base moves backward to release the pinch roller from the capstan, the play idler gear is simultaneously disengaged from the reel gear. As the head base moves backward, the FR arm centered by Section A is put into rotation by the FR arm spring to engage with the FWD side FR gear.

The FF lever is locked by the FR lock arm and performs the FF operation. (Fig.17)

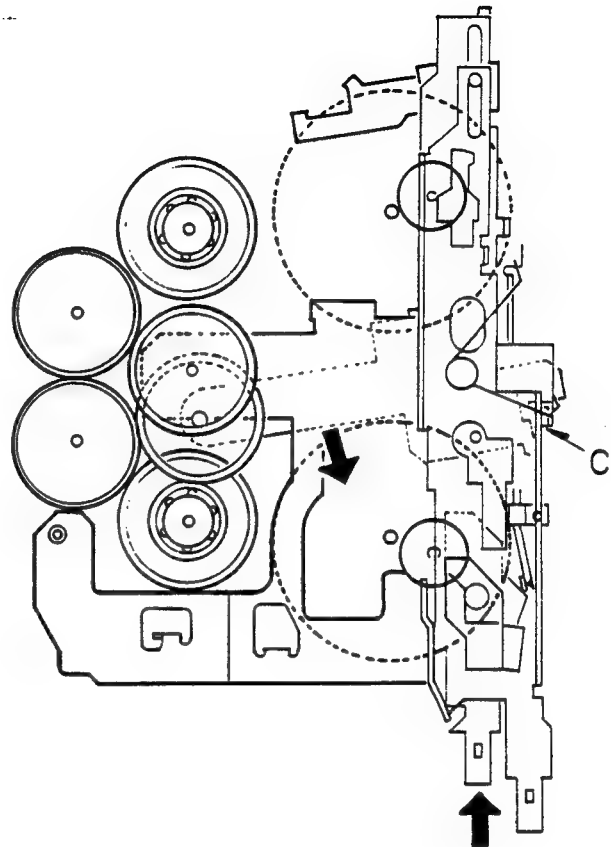
(3) REW operation

Fig. 18

Similar to the case of FF operation, pressing the REW lever causes the mute switch to be turned ON.

Simultaneously with release of the pinch roller from the capstan, the play idler gear is disengaged from the reel gear.

Section D of the REW lever presses a movable side of the FR arm spring, thereby engaging the FR gear to the FR gear on the REV side.

The REW lever is locked by the lock arm, performing the REW operation. This operation is cancelled when Section C is turned by the lever return spring. (Fig.18)

● Sensing Operation

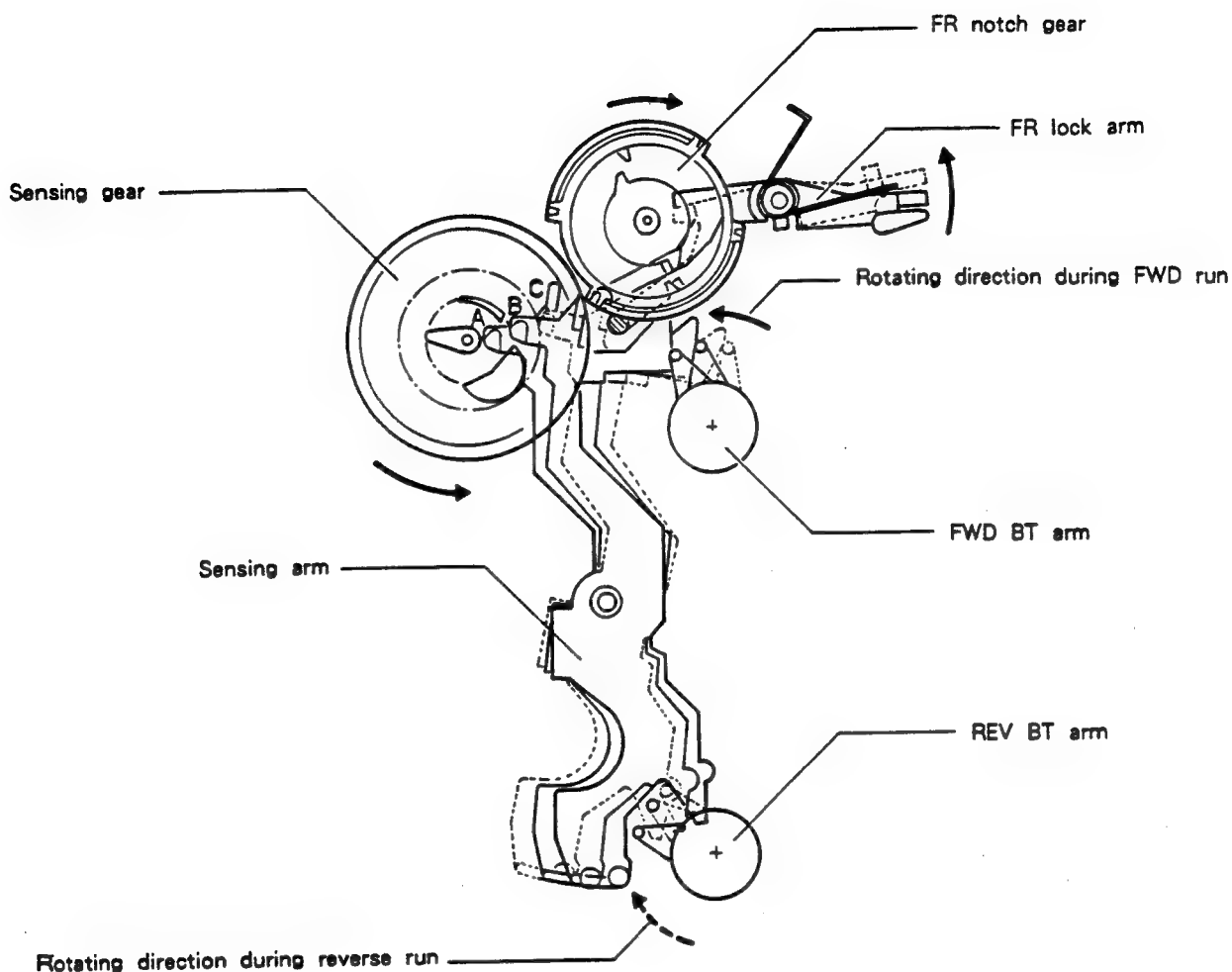


Fig. 19

1. During tape run: The sensing arm keeps oscillation between A and B under a force of the FWD BT arm (or REV BT arm).
2. At end of tape: The force of the BT arm is lost. The sensing arm stops at Position B, then pushed out to Position C by a crescent cam of the sensing gear.

3. Change of run direction:

The FR lock arm turns counter-clockwise along with movement of the sensing arm. The FR notch gear is unlocked and begins to turn.

● ATSC Operation

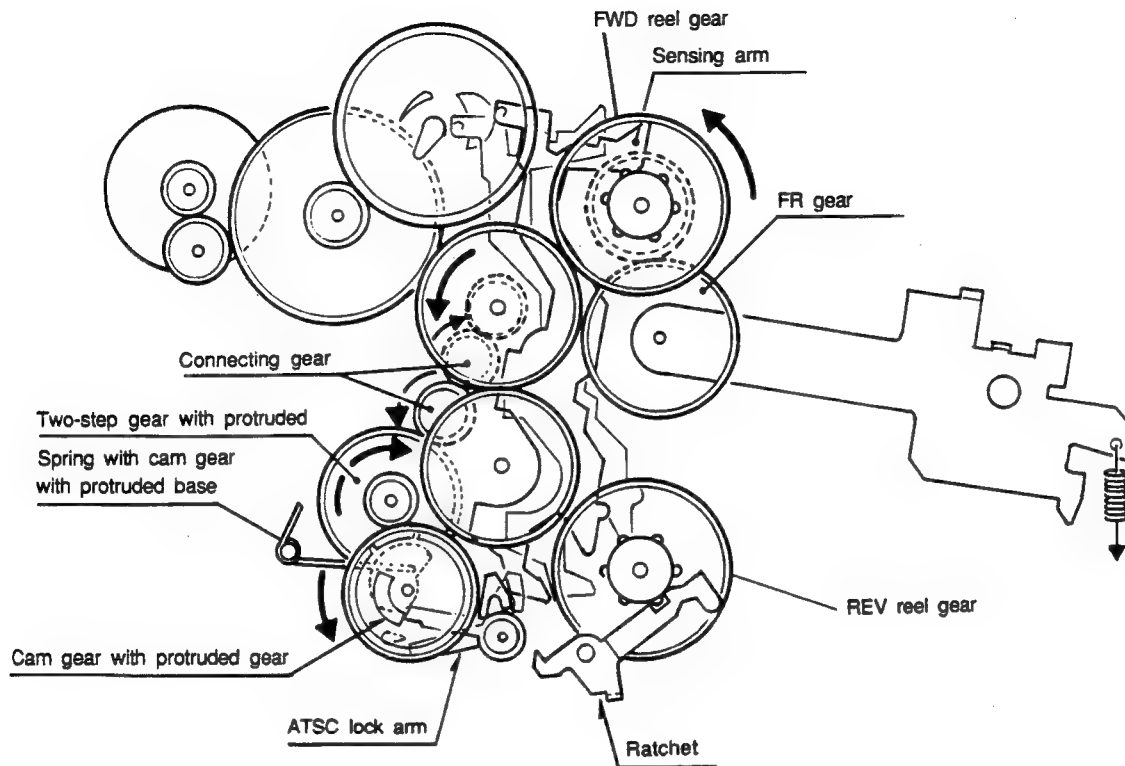
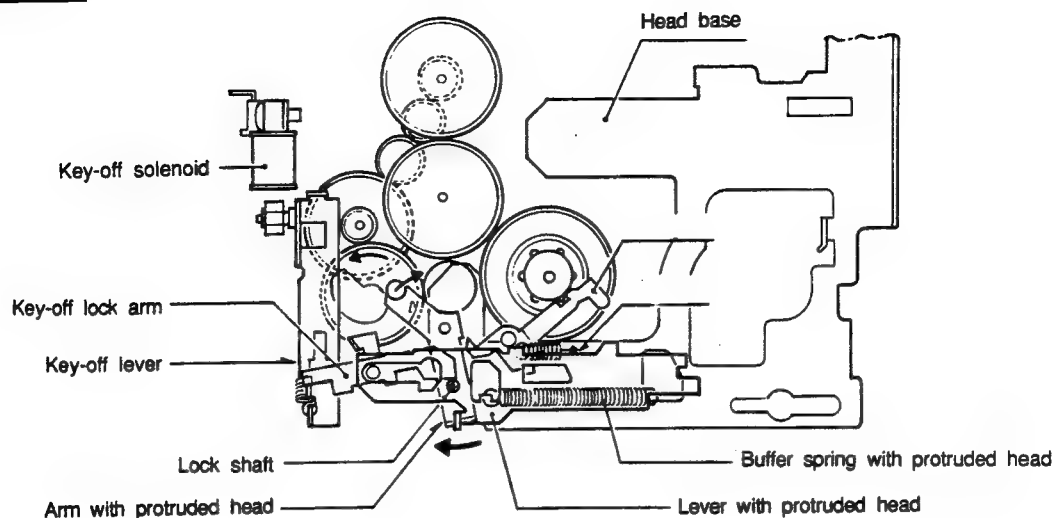


Fig. 18

1. At the position for releasing the head table, the FR gear is meshed with the FWD reel gear. Because the ratchet in the REV reel gear stops rotating, the tape must be wound up until no slack exist.
2. Because the rotation stops when no slack exists in the tape, sensing is performed. The sensing arm presses the ATSC lock arm, and the lock of the cam gear with protruded head gets out of position. Then, the cam gear is made to rotate.

● Key-off Operation

Release Condition



Play Condition

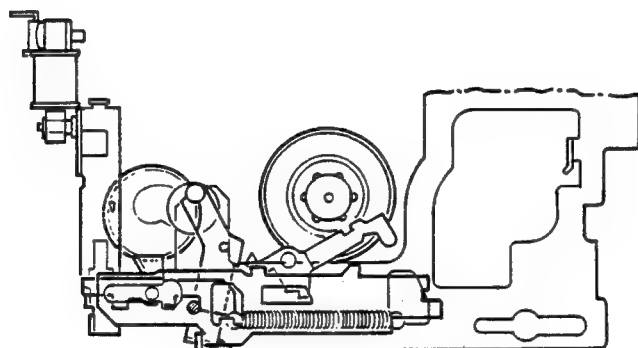


Fig. 19

1. Thrusting head: The arm with protruded head is rotated by the rotation of the cam gear with protruded head, and the lever with protruded head is pushed out. Because the lever with the protruded head and head base are connected by the buffer spring with protruded head, the head base moves forward.
2. Lock for head base:
When the lever with protruded head moves forward, the lock shaft caulked by the lever with protruded head shifts. Thus, the key-off lock arm can rotate, and the key-off lever reaches the key-off solenoid

by force of a spring, and becomes attached. (Although escape power works on the key-off lock arm by force of the head return spring, the solenoid maintains it.)

3. Key-off: The key-off lock arm is rotated by the power of the head return spring when the key-off solenoid is switched off, and the lever with protruded head and head base move back together.

● EJECT Operation

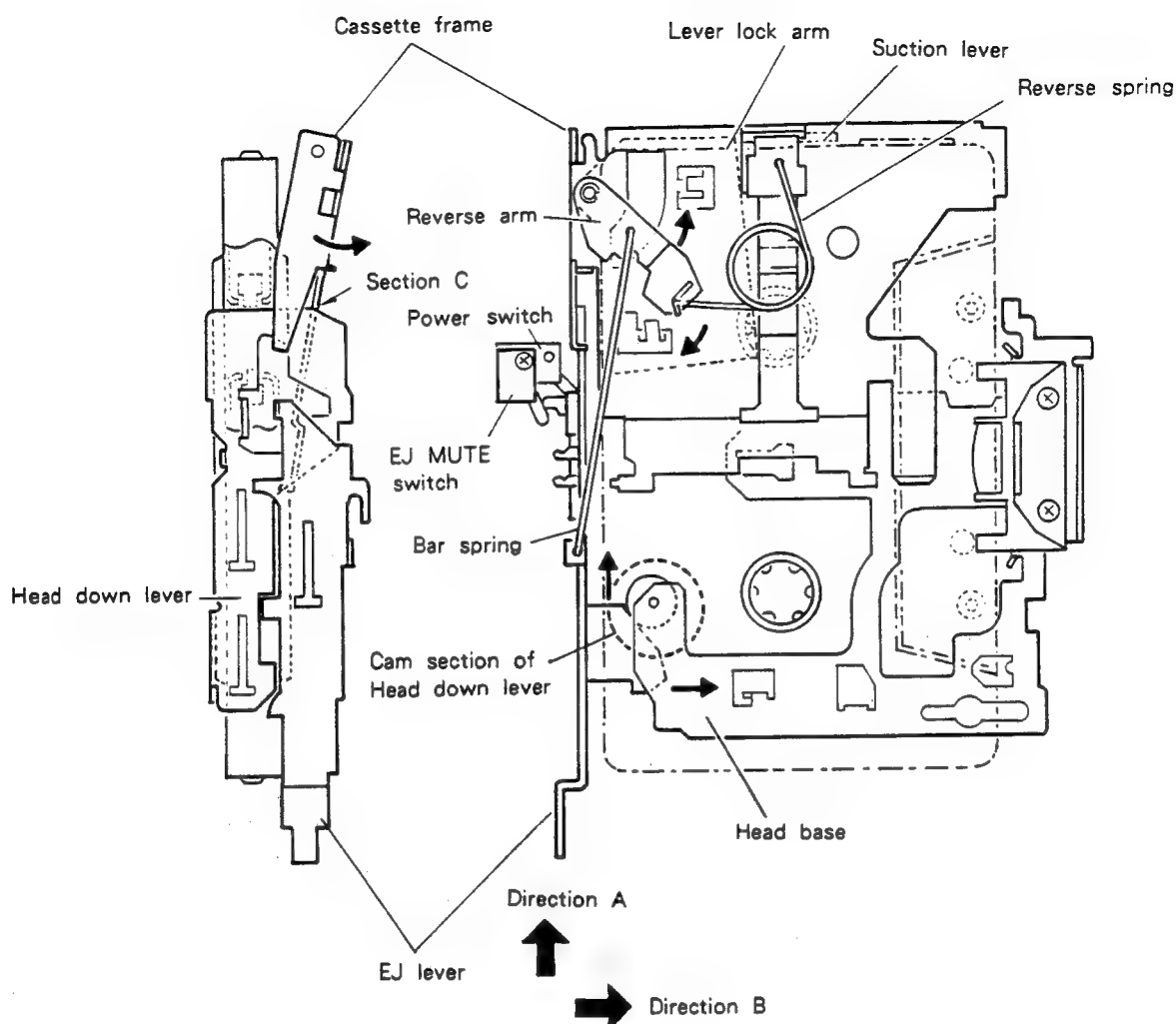


Fig. 20

1. Push the EJ lever in Direction A by hand (EJ MUTE SW ON) At the same time, the head down lever slides in Direction A.
2. The cam section of the head down lever returns the head base in Direction B (head base down operation).
3. Section C of the cassette frame is pushed up by the stroke of the head down lever (push-up operation).
4. The reverse arm is driven in a direction of arrow mark via bar spring by the EJ lever stroke.
5. The reverse spring passes through the reverse position to eject the cassette tape (eject operation).
6. With the EJ lever over-stroking, the lever lock arm can be rotated and locks the head down lever.
7. When released, the EJ lever returns and is stopped by the head down lever.

ADDITIONAL

 **PIONEER**
The Art of Entertainment

Service Manual

ORDER NO.
CRT1428

CASSETTE MECHANISM ASSEMBLY

CX-197

NOTE

- This service manual describes operation of the cassette mechanism incorporated in models listed in the table below.
- When performing repairs use this manual together with the specific manual for the model under repair.
- CX197 (CRT1328) does not have a Key-off function, but the key-off function is shown in this service manual of the CX-197 (CRT1428).

Model	Service Manual	Cassette Mechanism Assembly
KEH-M7400RDS/EW	CRT1429	EXK1735

Model	Service Manual	Cassette Mechanism Assembly

PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153, Japan
PIONEER ELECTRONICS SERVICE INC. P.O. Box 1760, Long Beach, California 90801 U.S.A.
PIONEER ELECTRONICS OF CANADA, INC. 505 Cochrane Drive, Markham, Ontario L3R 8E3 Canada
PIONEER ELECTRONIC [EUROPE] N.V. Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS AUSTRALIA PTY. LTD. 178-184 Boundary Road, Braeside, Victoria 3195, Australia TEL: [03] 580-9911
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FU DEC. 1991 Printed in Japan

1. DISASSEMBLY

Note: Always use new washer and E washer at the time of reassembling.

● How to Remove the Belt and Motor

1. Remove screw A fixing the FR lever. (Fig.1)
2. Remove three screws B fixing the sub-chassis unit. Move the unit first in Direction A, then in B direction, and lift it upward for removal. (Fig.2)
3. The belt can now be removed. (Fig.3)
4. Remove two screws C. The motor can be removed. (Fig.3)

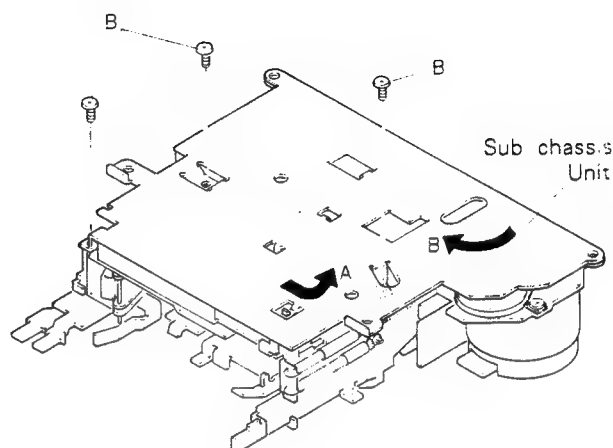


Fig. 2

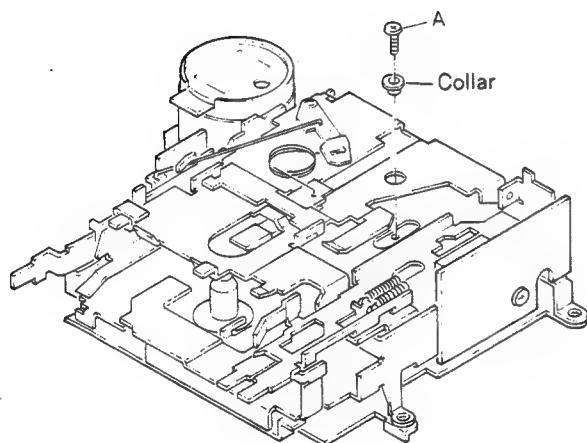


Fig. 1

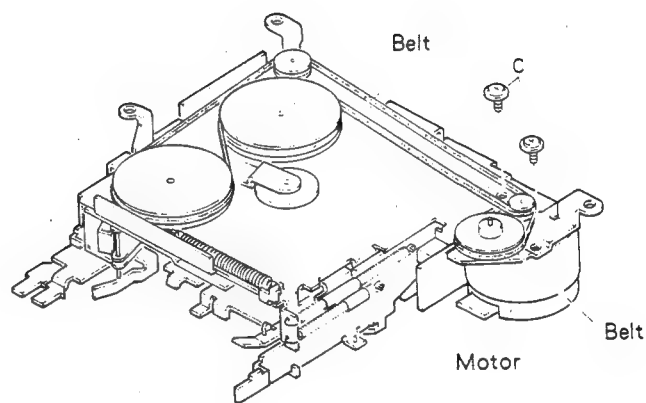
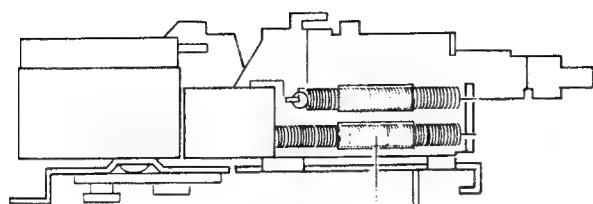


Fig. 3

● How to Remove the Pinch Roller Unit and Head



Spring A

Fig. 4

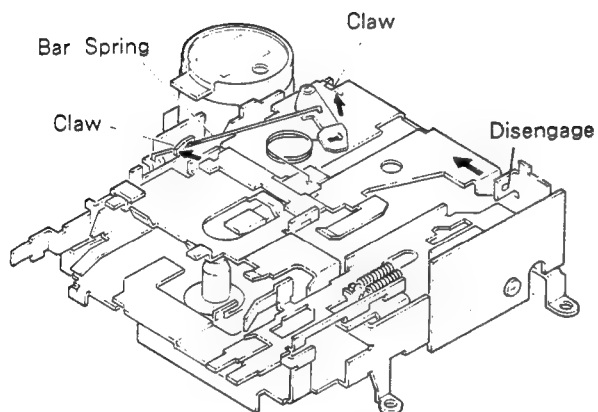


Fig. 5

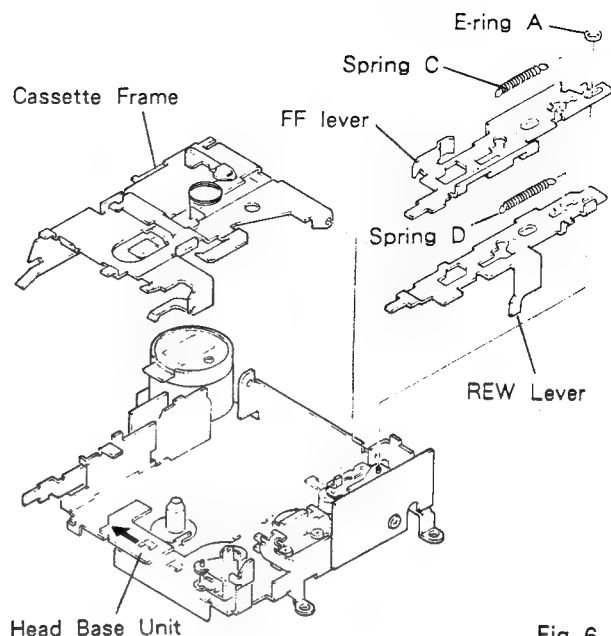


Fig. 6

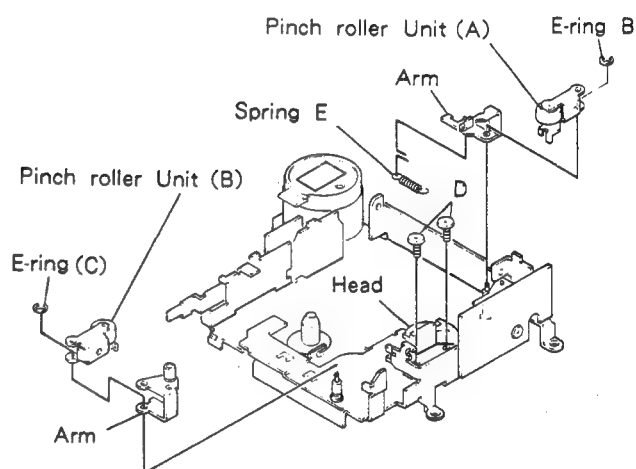


Fig. 7

1. Remove spring A. (Fig.4)
2. Extend claws (2 points). (Fig.5)
3. Remove bar Spring. (Fig.5)
4. Disengage projection by moving in a direction of arrow mark. (Fig.5)
5. The cassette frame is removed. (Fig.6)
6. Remove springs C and D. (Fig.6)
7. Remove E-ring A. (Fig.6)
8. Remove FF/REW levers. (Fig.6)
9. Move head base unit forward. (Fig.6)
10. Remove spring E. (Fig.7)
11. Remove E-ring B. The pinch roller unit (A) can be removed. (Fig.7)
12. Remove E-ring C. The pinch roller unit (B) can be removed. (Fig.7)
13. Remove two screws D. The head can be removed. (Fig.7)

2. ADJUSTMENT

2.1 CHECK POINTS OF CASSETTE MECHANISM

<p>Confirm the following items when replacing parts of the cassette mechanism.</p>	<p>■ Tape speed deviation: $3,000 \begin{smallmatrix} +90 \\ -30 \end{smallmatrix} \text{ Hz}$ $(4.76 \text{ cm/s} \begin{smallmatrix} +3 \\ -1 \end{smallmatrix} \%)$</p> <p>Using an NCT-111, measure the speed at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 – 6 seconds.</p>	<p>■ Wow and flutter: Less than 0.2% (WRMS)</p> <p>Using an NCT-111, measure the wow and flutter at the start and end of winding and take the maximum value. If values indicated by the pointer vary considerably, adjust to 70% of the minimum and maximum values. Measuring time shall be 5 – 6 seconds.</p>
<p>■ Fast forward and rewinding time: 100 – 120 seconds</p> <p>Using a C-60, set to fast forward and rewind, and measure the time with a stop watch.</p>	<p>■ Winding torque: 35 – 65 g · cm</p> <p>Using a cassette type torque meter (100 g · cm), measure the minimum value while in the play mode. Measuring time shall be 2.5 – 6 seconds.</p>	<p>■ F.F. torque: 70 – 120 g · cm</p> <p>Using a cassette type torque meter (120 g · cm), measure the value when the tape stops in the F.F. mode.</p>
<p>■ REW torque: 70 – 120 g · cm</p> <p>Using a cassette type torque meter (120 g · cm), measure the value when the tape stops in the REW mode.</p>	<p>■ Back tension torque: 2 – 6 g · cm</p> <p>After setting in the REW mode without loading a cassette tape for 5 minutes, measure the back tension torque in the play mode, using a cassette type torque meter.</p>	<p>■ Cassette loading force: Less than 0.7 kg</p> <p>Push the center of the cassette and measure the force with a tension meter (3 kg).</p>

2.2 AZIMUTH ADJUSTMENT

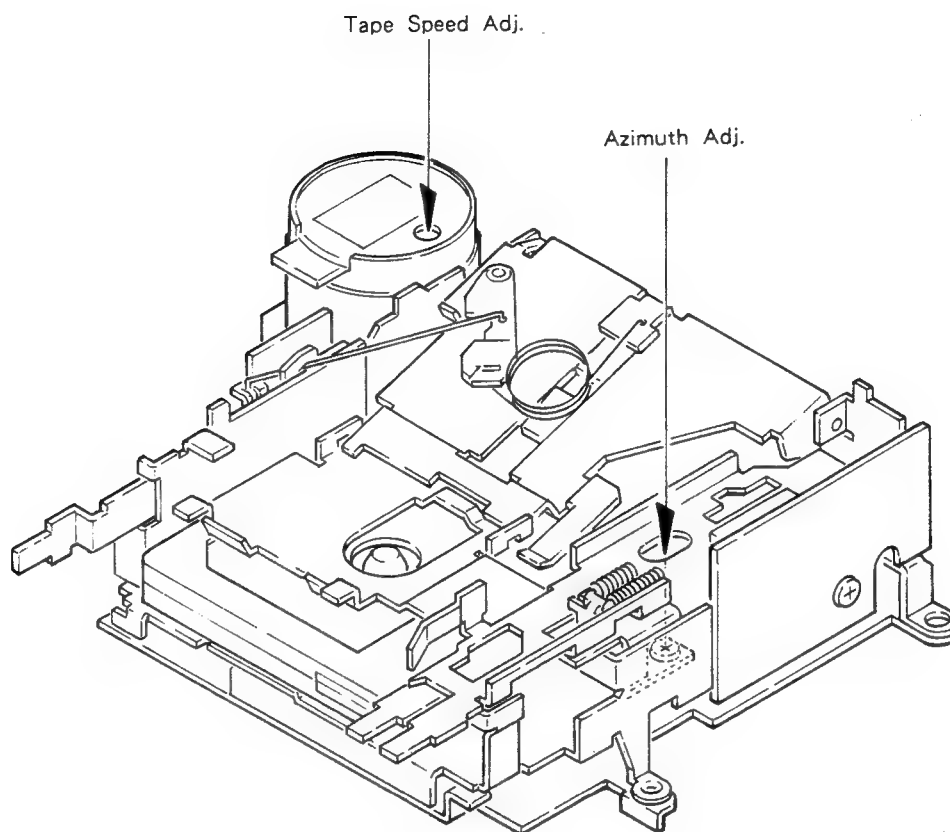


Fig. 8

● To Adjust (EXK1750)

1. Play "A" side of NCT-110 (10kHz, - 10dB). Adjust the screw for maximum output in forward and reverse directions.
2. Play "B" side in forward and reverse directions to confirm adjustment.

2.3 TAPE SPEED ADJUSTMENT

1. Reproduce NCT-111 (3kHz, - 10dB). Adjust the semifixed resistor so that frequency counter shows 3010Hz (+80Hz, - 40Hz).

3. MECHANISM DESCRIPTION

● Loading operation

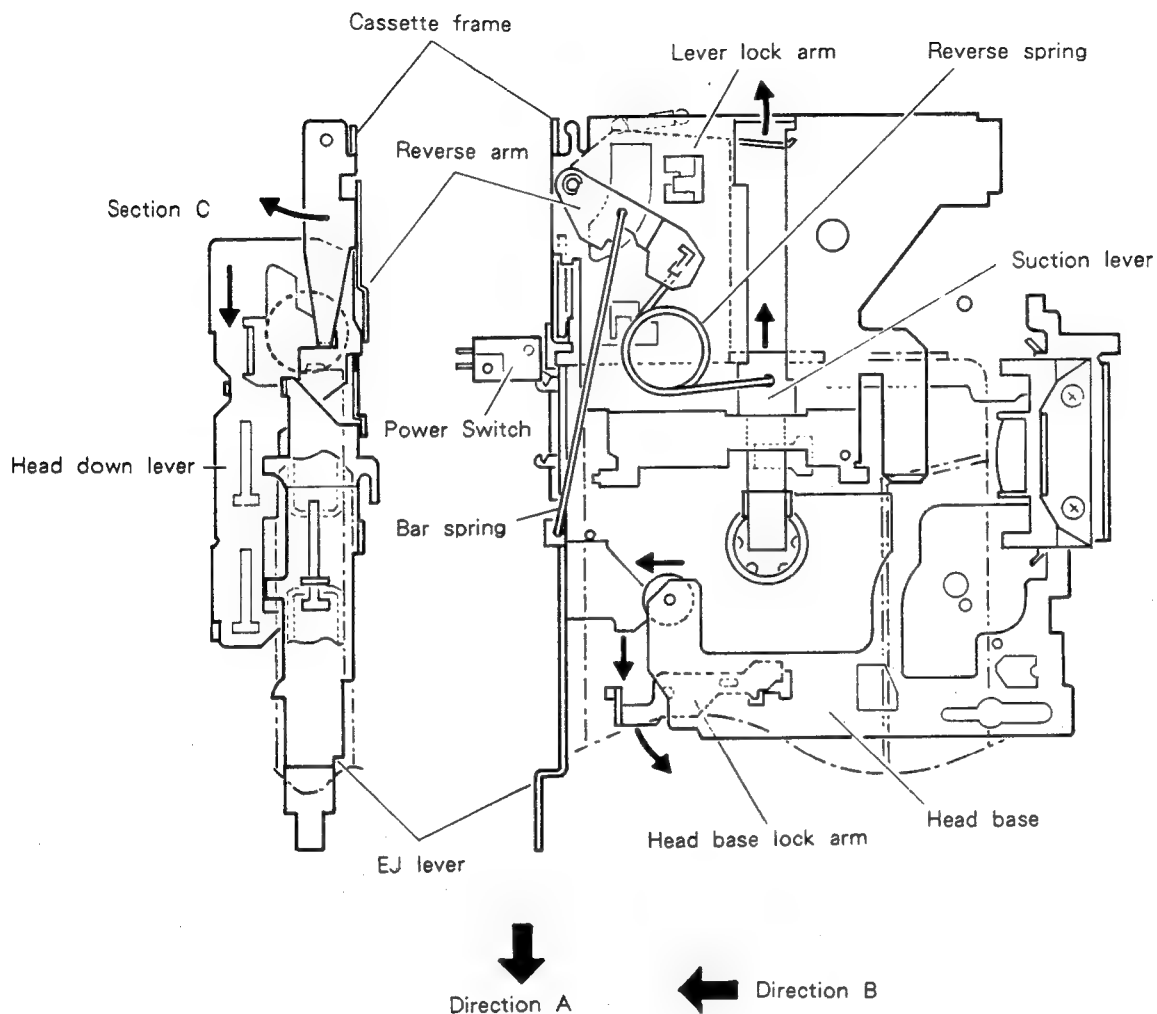


Fig. 9

1. A cassette tape, when inserted, pushes a suction lever.
The reverse spring rotates to move past the reverse point. Then, the cassette is drawn by a force of a reverse spring (suction operation).
2. After suction, the lever lock arm is pressed to be unlocked.
3. The head down lever is unlocked and the lever moves in Direction A.
4. While moving, the EJ lever turns ON the power switch.
5. The cassette frame engaged to the section C of the head down lever turns. (Cassette drop operation)
6. At the stroke end, the head down lever turns the head base lock arm.
7. A Stopper of the head base lock arm is released, and the head base moves forward (Direction B).

● MS Operation

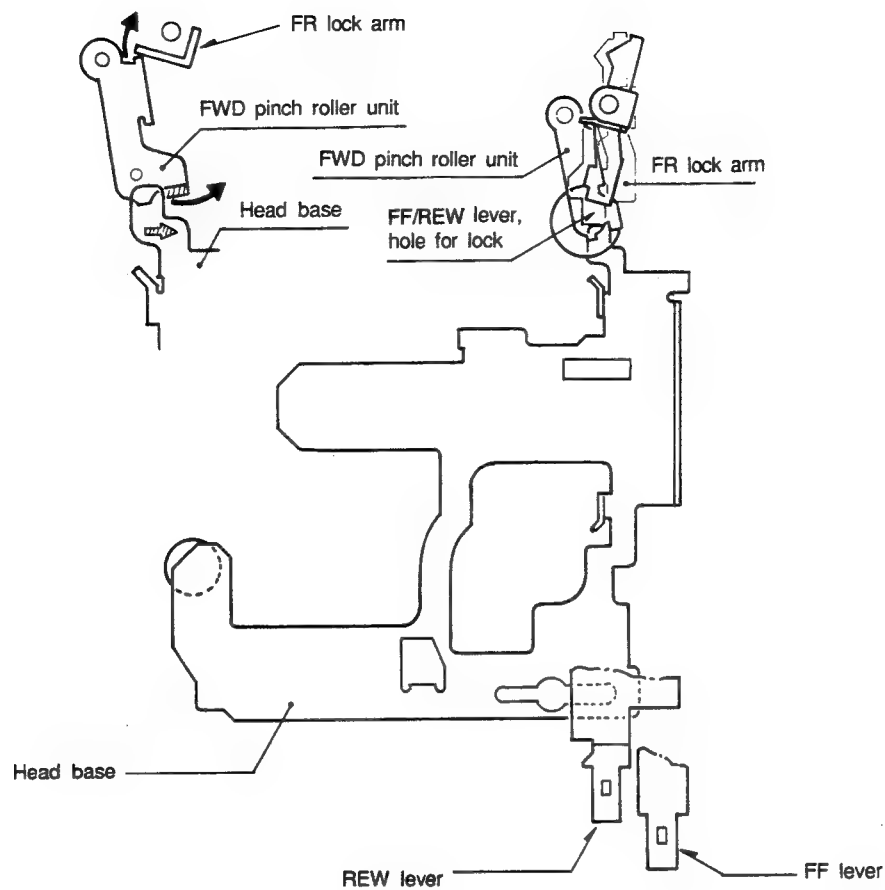


Fig. 10

The head base is moved back by switching the key-off solenoid off from the REW or FF condition, and is lowered (rotated) FWD pinch roller unit. The FWD pinch roller unit presses the bending part of FR lock arm to make it rotate in the direction that releases the lock. The lock of the FF/REW lever is consequently released.

Subsequently, the head comes out from the ATSC to enable PLAY condition.

● Direction Changeover Operation

(1) FWD play operation

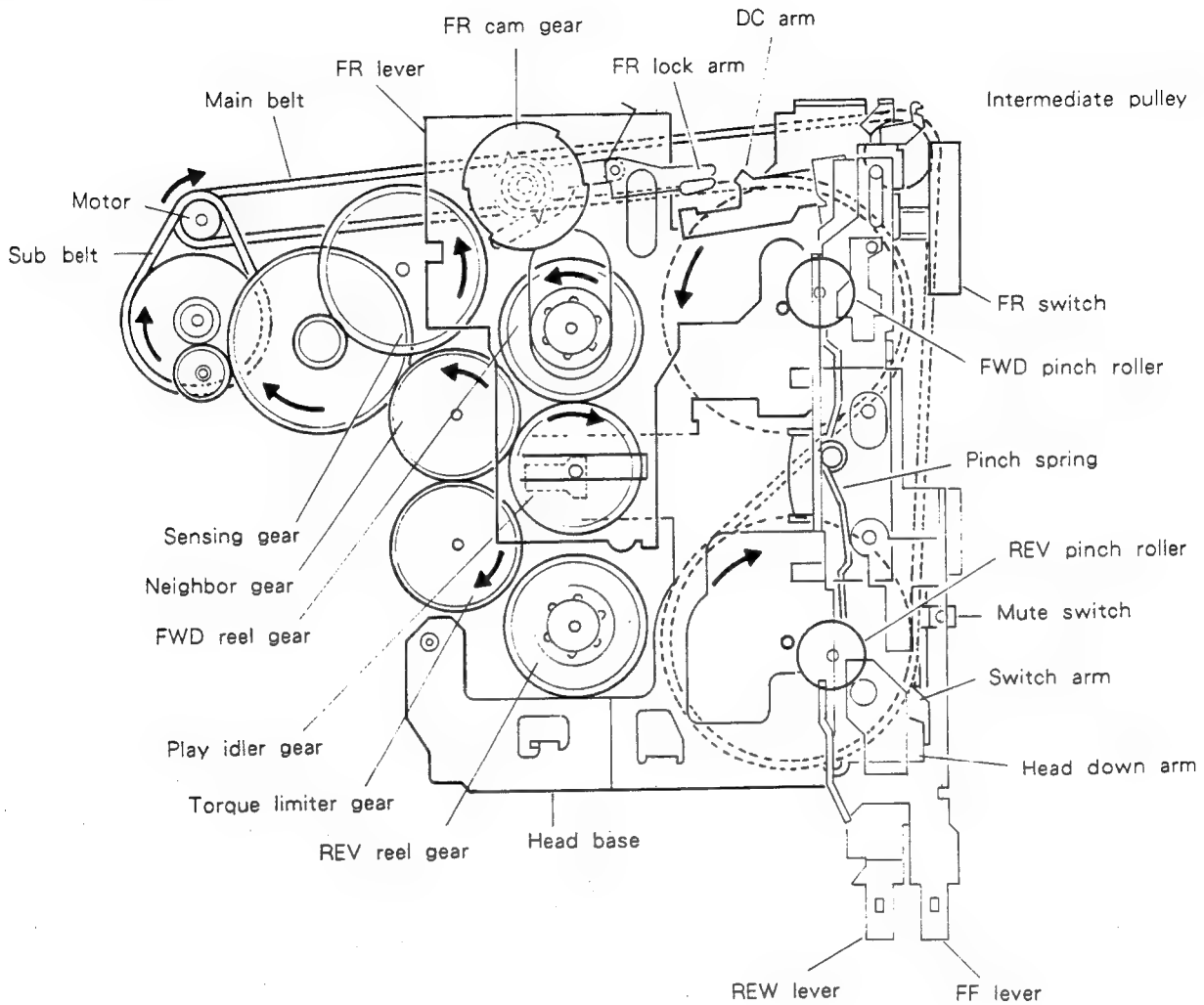


Fig. 11

When the FR lever is in the top position, the pinch spring is in the upper position to press the FWD pinch roller. The FR switch also moves upward and its reaction causes downward force on the FR lever. The spring attached to the FR lever applies upward force to the play idler gear from above to engage it with the neighbor gear and FWD reel gear.

The tape is driven in the FWD direction by a running motor and taken up by the REV reel gear via the torque limiter gear.

(2) Direction change operation

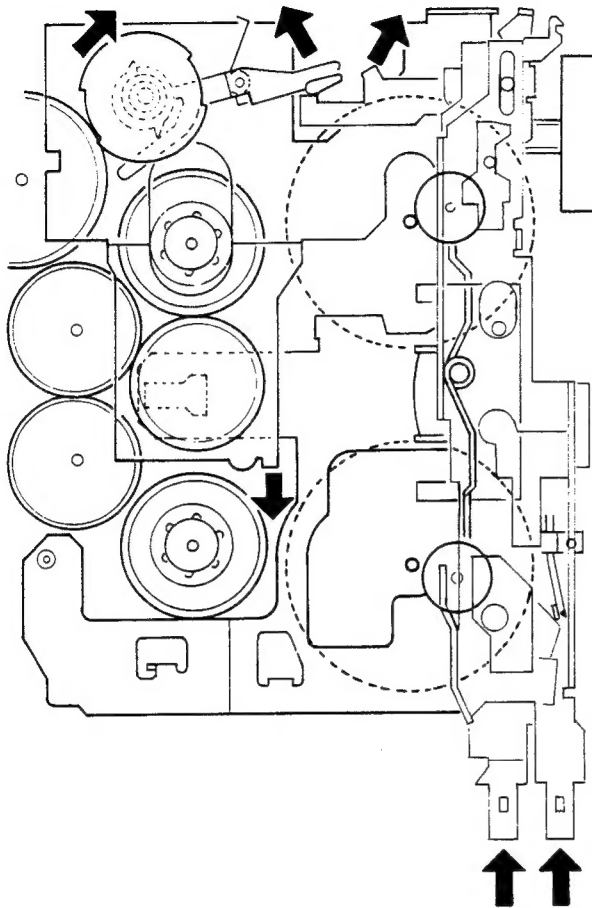


Fig. 12

The direction is changed by pressing FF and REW levers simultaneously. The DC arm turns along a cam groove of FF and REW levers to turn the FR lock arm. As the FR lever applies force from above downward, the FR cam gear turns and the notch meshes with the sensing gear. As a result, the FR lever moves downward.

When FF and REW levers are kept pressed, the lock arm contacts the outside of the FR cam gear to prevent changeover between FWD and REV. Pressing FF and REW levers also cause the mute switch to be turned ON. In other words, muting is valid while FF and REW levers are pressed. (Fig.12)

(3) REV play operation

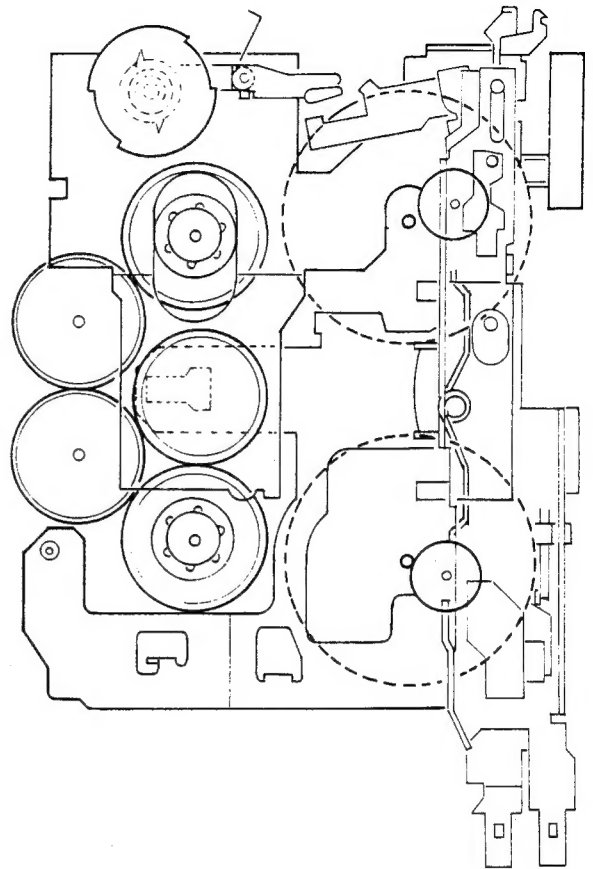


Fig. 13

Moving the NR lever up and down causes changeover among the pinch roller, FR switch, and play idler gear. With FF and REW levers having been returned, the FR lock arm returns to the normal lock position and locks the gear when the FR gear completes an one-half turn. The mute arm also returns to turn OFF the mute switch. The reverse play state is thus obtained. (The same applies to changeover from REV to FWD.)

● FF/REW Operation

(1) FWD play operation

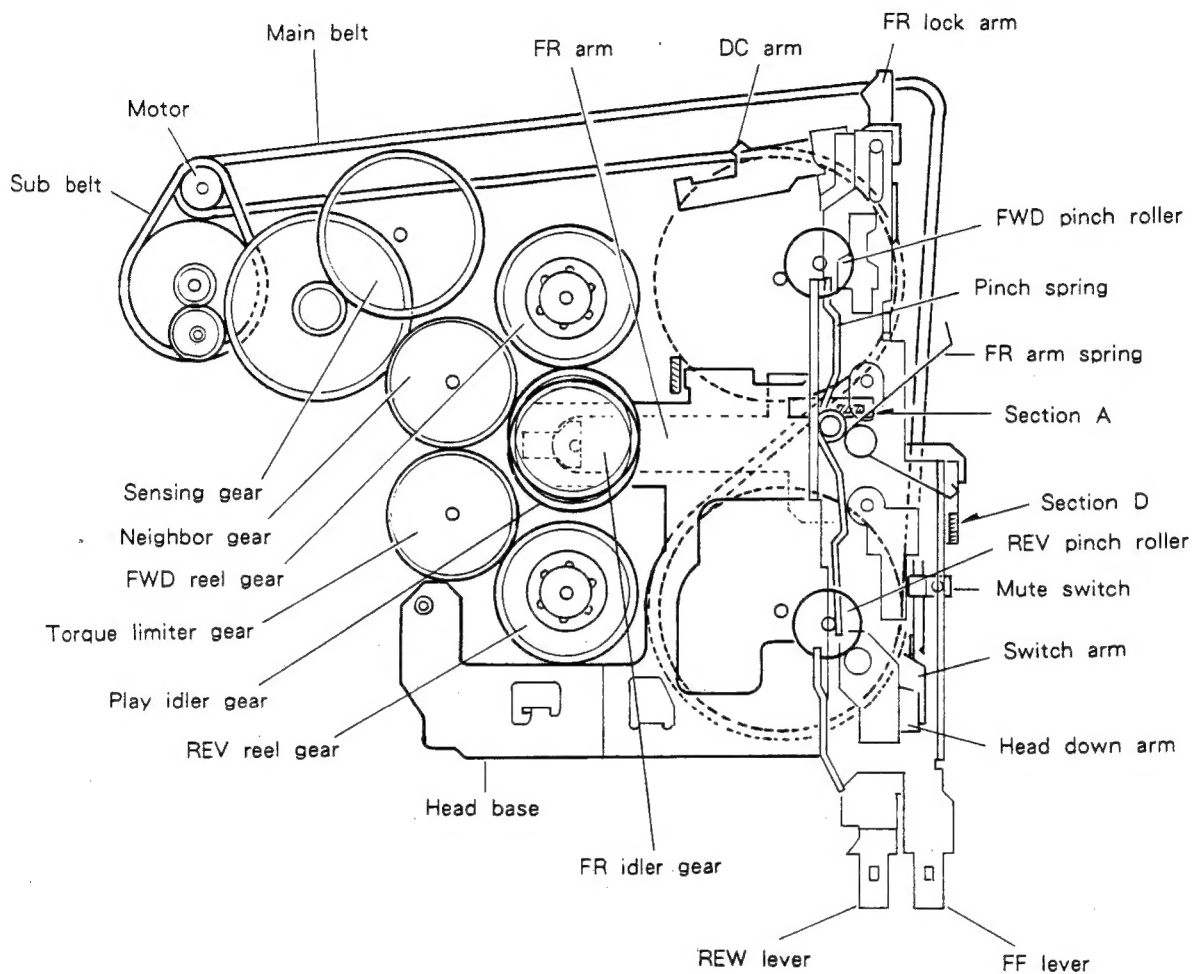


Fig. 14

In the FWD (REV) play state, the head base is fixed by a chassis stopper. The pinch spring presses the pinch roller into contact with a capstan to drive forward the tape. The REV reel gear takes up the tape via the torque limiter gear. In this case, the FR idler gear on the FR arm is centered by Section A of the head base and thus not rotating.

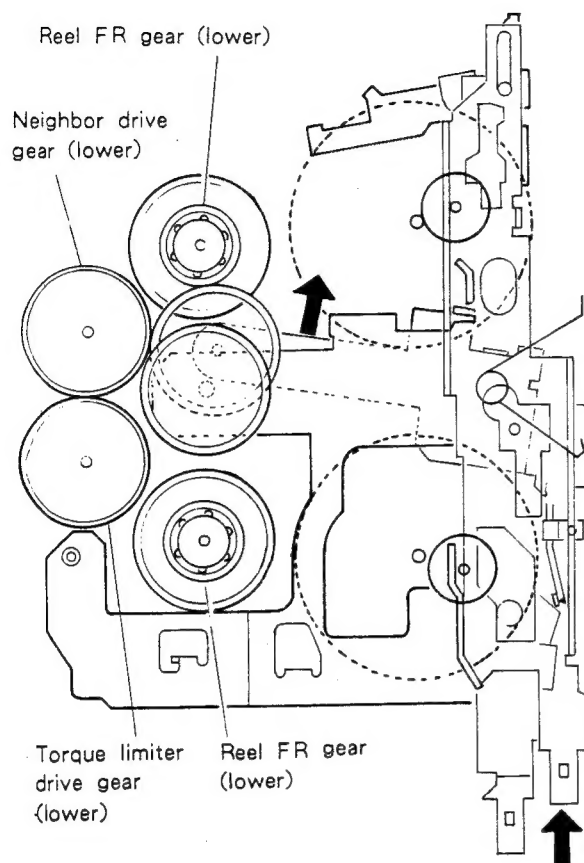
(2) FF Operation

Fig. 15

FF operation is obtained by pressing and locking the FF lever. As the FF lever is pressed, the switch arm turns to turn ON the mute switch. The head base is moved backward along the FF lever cam groove.

As the head base moves backward to release the pinch roller from the capstan, the play idler gear is simultaneously disengaged from the reel gear. As the head base moves backward, the FR arm centered by Section A is put into rotation by the FR arm spring to engage with the FWD side FR gear.

The FF lever is locked by the FR lock arm and performs the FF operation. (Fig.15)

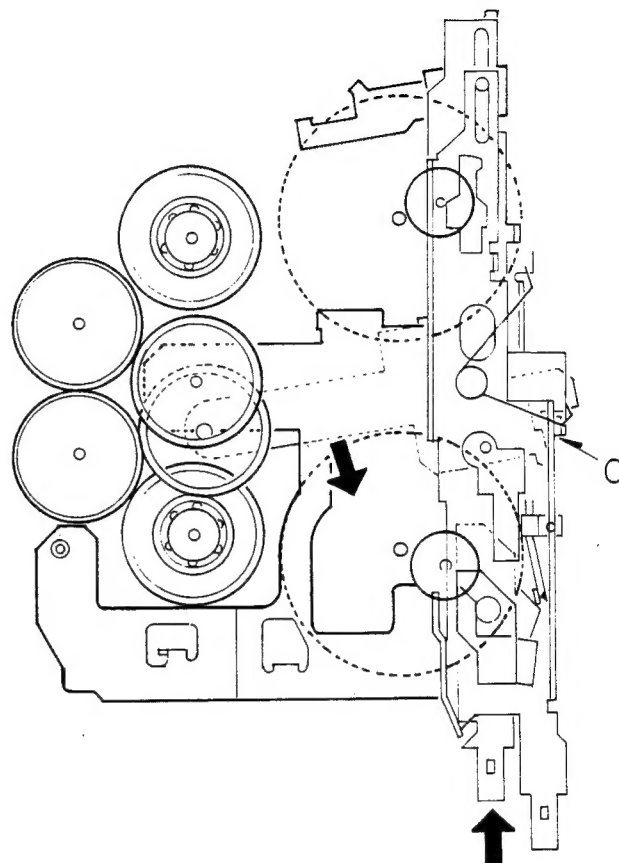
(3) REW operation

Fig. 16

Similar to the case of FF operation, pressing the REW lever causes the mute switch to be turned ON.

Simultaneously with release of the pinch roller from the capstan, the play idler gear is disengaged from the reel gear.

Section D of the REW lever presses a movable side of the FR arm spring, thereby engaging the FR gear to the FR gear on the REV side.

The REW lever is locked by the lock arm, performing the REW operation. This operation is cancelled when Section C is turned by the lever return spring. (Fig.16)

● Sensing Operation

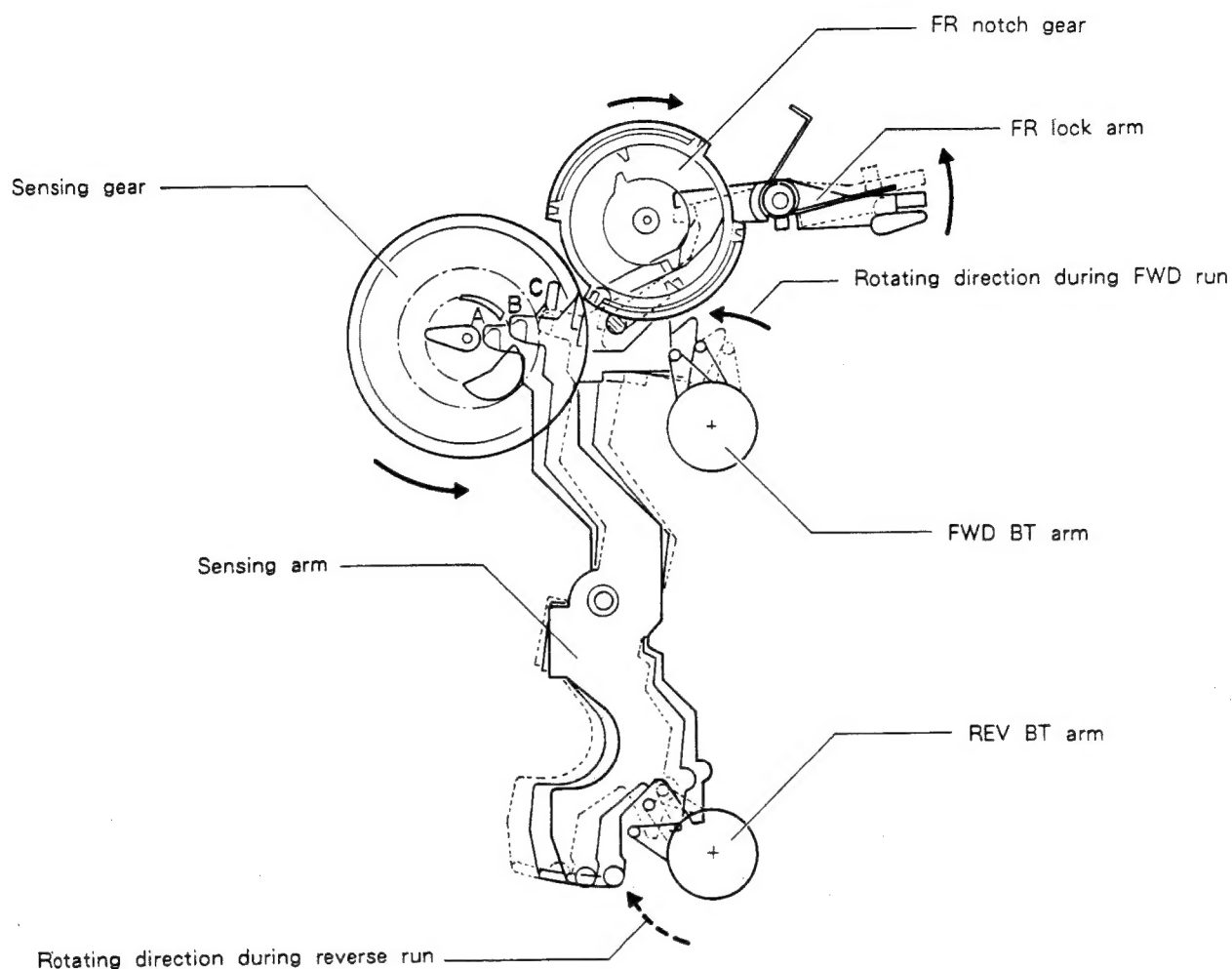


Fig. 17

1. During tape run: The sensing arm keeps oscillation between A and B under a force of the FWD BT arm (or REV BT arm).
2. At end of tape: The force of the BT arm is lost. The sensing arm stops at Position B, then pushed out to Position C by a crescent cam of the sensing gear.

3. Change of run direction:

The FR lock arm turns counter-clockwise along with movement of the sensing arm. The FR notch gear is unlocked and begins to turn.